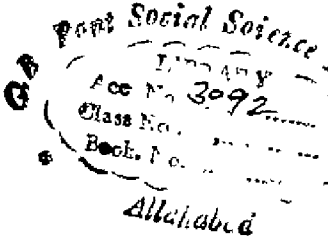


Pub he n

nited States of America
r reproduced in any
permission except in
ed in critical articles
s Harper & Row,
New York, N Y 10022

ublication Data



Phillip, joint

5

ociates
ty Butterfield

hic Systems

ts

phs

ntograph Raghubir Singh, Woodfin Associates

ell Capa, Magnum Photos, Inc

ey Washburn, Anthro-Photo

New York Public Library, Rare Book

Bettmann Archive

er Pictures

e Bettmann Archive

bert F Bisson © National Geographic

Society of Antiquaries of London

urtesy of The American Museum of History

ekh, Magnum Photos, Inc

de World Photos

poleon Chagnon Anthro-Photo

rc & Evelyne Bernheim, Woodfin Associates

ph Solecki

e Bettmann Archive, Painting by ranach

ver Pictures

The Bettmann Archive

de World Photos

ott Erwitt, Magnum Photos, Inc

S Department of Agriculture

e Peabody Museum of Natural History, iversity

t R Campbell, reproduced by on of Professor P V Tobias

nent of Anatomy, University of esrand Medical School, Johannesburg, frica Right R G Klomfass, ced by permission of Professor P V

Lowie Museum of Anthropology ity of California, Berkeley, photos by Ross

en DeVore, Anthro-Photo

usée de l'Homme, Paris

rnard Pierre Wolff, Magnum Photos,

e Bettmann Archive

David Hu ter R ght dwa d

83 Service Into Sri Documentation Fran

84 Wide World Ph

87 F S Vidal

89 Henri Cartier-Br Inc

91 United Press Int

96 J M Bishop, Bi

97 Courtesy of The Natural History

99 Steve Gaulin, A

101 Top Harry F Wisconsin Primate L Jose M R Delgado

103 Leanne T Na

104 Irven DeVore,

108 George B Sch

109 Dr Helmut A Inc

111 Irven DeVore Anthro-Photo

113 Wide World P

114 Cornell Capa,

118 a Carl Frank Bernheim, Woodfin c Jean Claude Lejeu d Audrey Ross e Heron, Woodfin Ca

119 g Werner Bis

121 Courtesy of T Natural History

122 Irven DeVore

125 Courtesy of T Natural History

128 Leonard Freed

131 Cornell Capa

134 a Marc Ribou b Ken Heyman

135 c Cornell Ca d Carl Frank e K Hartman, Magnum

136 g George Ro h Ken Heyman Magnum Photos In k Rene Burri, Magn

138 Rene Burri, M

139 Bernard Pier Inc

4 rtw H

50 d W d Pho
C C p Mag m n
4 E o Enw tt M s m Ph n
5 A e W bb Mag m Pho
5 N o M e . . Canada
261 Wide World Photos
263 George Rodger, Magnum Photos, Inc
264 United Press International Photo
267 Rene Burri, Magnum Photos, Inc
268,270 George Rodger, Magnum Photos, Inc
272 Alex Webb, Magnum Photos, Inc
274 Inge Morath, Magnum Photos, Inc
275 Irven DeVore and William James, Anthro-Photo
277 Library of Congress
279 George Rodger, Magnum Photos, Inc
281 Leopold Pospisil
285 United Press International Photo
287 George Rodger, Magnum Photos, Inc
290 Wide World Photos
292 Tony Howarth, Woodfin Camp & Associates
294 Ken Heyman
295 Pitt Rivers Museum, University of Oxford
97 Courtesy of Alexander Marshack
00 The Museum of Primitive Art
03 Top Courtesy of The American Museum of Natural History Bottom Marlie and Stewart Guthrie
05 David Maybury-Lewis, Anthro Photo
07 Courtesy of The American Museum of Natural History
0 Marjorie Shostak Anthro-Photo
2 Edward O Henry
4 The Bettmann Archive
Sergio Larrain, Magnum Photos, Inc
United Press International Photo
Wide World Photos
Fred Eggan
Colin Turnbull
Bruno Barbey, Magnum Photos, Inc
Audrey Ross
Raghubir Singh, Woodfin Camp & ciates
Henri Cartier-Bresson, Magnum s, Inc
Joshua Freiwald
4 M rt nd ew tt
8 n B M
9 h N p n M
4 W de V
342 The Hamlyn Group Picture Library
343 Ken Heyman
345 Hiroji Kubota, Magnum Photos Inc
346 Wide World Photos
349 Stock, Boston
353 Ian Berry, Magnum Photos, Inc
356 K Gunnar Bruce Coleman Inc
360 Marc Riboud Magnum Photos Inc
361 Carl Frank
363 Wide World Photos
366 Donald McCullin, Magnum Photos, Inc
369 Richard Harrington, Camera Press Ltd London
371,372 Richard N Henderson
375 Bruno Barbey, Magnum Photos, Inc
377 Top United Press International Photo Bottom Brian Brake, Magnum Photos, Inc
380 Bruno Barbey, Magnum Photos, Inc
381 Wide World Photos
385 Photograph Courtesy of Museum of the American Indian, Heye Foundation
387 Colin Turnbull
388 389 Klaus Friedrich-Koch
392 United Press International Photo
395 Wide World Photos
396 Courtesy of United Nations, T Chen
398 Top and bottom Napoleon Chagnon, Anthro-Photo
399,400 Napoleon Chagnon, Anthro-Photo
405 Wide World Photos
408 Ken Heyman
409 United Press International Photo
411 Ministry of Tourism, Mexico
415 Top and bottom Nancy Gelthufe
417 Top and bottom Shirley Fiske
420 United Press International Photo
421 Jeffrey Blankfort, BBM Associates
422 Ernest Lowe, BBM Associates
425 Louise C Brown
448 Marc Riboud, Magnum Photos, Inc
429 George Rodger, Magnum Photos Inc
435 Irving Louis Horowitz
438 Wide World Photos
439 Mrs B Prynn, London
K
Photo
187-501 passim L S
506-527 passim M e
524-543 passim Ro
546-559 passim P H

Line Drawings

Endpapers "Languages Spencer Robert F and I tor Anthropology" Ind ex Company Publishers Di from the authors

Figure 2-7 From Proceed National Academy of Sci

Figure 2-8 Modified fro drawing, 1967 Used with Dr A T Tihlman

Figure 2-9 Reprinted by Bernard Campbell, *Human* (Chicago Aldine Publishi Copyright © 1966 1974 b Campbell

Figure 2-10 Reprinted by H L Movius "The Lower Culture of Southern and E *Transactions of the Americ Society* Vol 68 Pt 4 1943

Figure 7-1 From The Ori Charles F Hockett in Scient Copyright © 1960 by Scient Inc All rights reserved Repr permission of W H Freeman for Scientific American Inc

Figure 7-3 Reprinted by pe Philip Lieberman *On the Ori* © 1975 by Macmillan Publis

Figure 10-1 From Jack R Ha "Agricultural Origins Centers *centers*," *Science* Vol 174 (1971 p 472 Reprinted by pe

Figure 10-2 From Harris, Ma *People and Nature* © 1971, H Y Crowell Co , Inc Reprinted of the publisher

Figure 10-3 From Hammond, *Introduction to Social and Cult Anthropology* © 1971 by Macm ing Co Reprinted by permissio publisher

Preface

The purpose of a liberal arts education is to
students about the nature of the world as we k
teach them ways of thinking about the world
conceive it, discipline them as critical thinkers,
at the same time provide them with the intel
equipment that will enable them to open their
so that they can contemplate new concepts, idea
"facts" as these become available. In the end, thi
down to educating an enlightened citizenry.

Anthropology has a critical contribution to m
this process. Very few students who take undergra
courses in anthropology will go on to become pr
sional anthropologists. But quite possibly their i
duction to anthropology will be a cornerstone in
liberal arts education. Many anthropologists have r
this point. They argue that anthropology, special
as it does in the study of remote and "foreign" peo
is an ideal vehicle for showing the amazing variet
ways of life, how culturally relative world views
how each society accepts its world view as "tru
how damaging this perspective can be in a rap
changing world, and how liberating it feels to
oneself from the bonds of such ethnocentric think

We believe, however, that anthropology has son
thing much more subtle and, ultimately, more profou

en DeVore, Anthro-Photo
ide World Photos
nelli Capa, Magnum Photos Inc
bert Erwitt, Magnum Photos, Inc
ex Webb, Magnum Photos, Inc
tional Museums of Canada
ide World Photos
orge Rodger Magnum Photos Inc
ited Press International Photo
ne Burn, Magnum Photos Inc
George Rodger, Magnum
nc
ex Webb, Magnum Photos, Inc
ge Morath, Magnum Photos, Inc
en DeVore and William James,
hoto
brary of Congress
orge Rodger, Magnum Photos, Inc
opold Pospisil
ited Press International Photo
eorge Rodger Magnum Photos Inc
ide World Photos
ny Howarth Woodfin Camp &
s
n Heyman
Rivers Museum, University of

urtesy of Alexander Marshack
Museum of Primitive Art
Courtesy of The American
f Natural History Bottom Marnie
rt Guthrie
d Maybury-Lewis, Anthro-Photo
tesy of The American Museum of
story
ine Shostak, Anthro-Photo
rd O Henry
Hermann Archive
Larrain Magnum Photos, Inc
d Press International Photo
World Photos
ggan
Turnbull
Barbey Magnum Photos, Inc
Ross
ir Singh, Woodfin Camp &

artier-Bresson, Magnum

relwald

334 *Marnie and Stewart Guthrie*
338 *Ian Berry Magnum Photos Inc*
339 *John Nance/Penamin, Magnum Photos Inc*
341 *Wide World Photos*
342 *The Hamlyn Group Picture Library*
343 *Ken Heyman*
345 *Hiroji Kubota, Magnum Photos Inc*
346 *Wide World Photos*
349 *Stock, Boston*
353 *Ian Berry, Magnum Photos, Inc*
356 *K Gunnar, Bruce Coleman, Inc.*
360 *Marc Riboud, Magnum Photos, Inc*
361 *Carl Frank*
363 *Wide World Photos*
366 *Donald McCullin, Magnum Photos, Inc*
369 *Richard Harrington, Camera Press, Ltd., London*
371,372 *Richard N Henderson*
375 *Bruno Barbey, Magnum Photos, Inc*
377 *Top United Press International Photo Bottom Brian Brake, Magnum Photos, Inc.*
380 *Bruno Barbey, Magnum Photos, Inc*
381 *Wide World Photos*
385 *Photograph Courtesy of Museum of the American Indian, Heye Foundation*
387 *Colin Turnbull*
388,389 *Klaus Friedrich-Koch*
392 *United Press International Photo*
395 *Wide World Photos*
396 *Courtesy of United Nations, T Chen*
398 *Top and bottom Napoleon Chagnon Anthro-Photo*
399,400 *Napoleon Chagnon Anthro-Photo*
405 *Wide World Photos*
408 *Ken Heyman*
409 *United Press International Photo*
414 *Ministry of Tourism, Mexico*
415 *Top and bottom Nancy Gelthufe*
417 *Top and bottom Shirley Fiske*
420 *United Press International Photo*
421 *Jeffrey Blankfort, BBM Associates*
422 *Ernest Lowe, BBM Associates*
425 *Louise C Brown*
448 *Marc Riboud, Magnum Photos, Inc*
429 *George Rodger, Magnum Photos Inc*
435 *Irving Louis Horowitz*
438 *Wide World Photos*
439 *Mrs B Prynn London*
441 443 *George Rodger Magnum I Inc*
448–465 *passim David F Hunter*
468–484 *passim Richard B Lee Anthro-Photo*
487–503 *passim L S Vidal*
506–522 *passim Marie and Stewart*
524–543 *passim Richard N Henders*
546–569 *passim Jeff Russell*

Line Drawings

Endpapers "Languages of the World Spencer Robert F and Hilda B Jacson *The Anthropology* Harper and William C Br Company Publishers Used with permi from the authors

Figure 2-7 From Proceedings of the National Academy of Sciences

Figure 2-8 Modified from Dr A L Zihl drawing, 1967 Used with permission of Dr A L Zihlman

Figure 2-9 Reprinted by permission from *Bernard Campbell, Human Evolution* (Chicago Aldine Publishing Company) *Copyright* 1966 1974 by Bernard G Campbell

Figure 2-18 *Reprinted* by permission from H L Movius "The Lower Palaeolithic Cultures of Southern and Eastern Asia *Transactions of the American Philosophical* Society Vol 38 Pt 4 (1948)

Figure 7-1 From "The Origin of Speech" b Charles F Hockett in *Scientific American* Copyright 1960 by Scientific Americ Inc All rights reserved Reprinted by permission of W H Freeman and Company for Scientific American Inc

Figure 7-4 *Reprinted* by permission from Philip Lieberman *On the Origins of Langua* 1975 by Macmillan Publishing Co Inc

Figure 10-1 From Jack R Harlan "Agricultural Origins Centers and Nonc Centers" *Science* Vol 174 October 29 1971 p 472 Reprinted by permission

Figure 10-2 From Harris Marvin *Culture People and Nature* 1971 1975 by Thomas Y Crowell Co Inc Reprinted with permission of the publisher

Figure 10-3 From Hammond Peter B *An Introduction to Social and Cultural Anthropology* 1971 by Macmillan Publishing Co Reprinted by permission of the publisher

Preface

The purpose of a liberal arts education is
students about the nature of the world as w
teach them ways of thinking about the wo
conceive it, discipline them as critical think
at the same time provide them with the in
equipment that will enable them to open th
so that they can contemplate new concepts, ic
"facts" as these become available. In the end, t
down to educating an enlightened citizenry.

Anthropology has a critical contribution to
this process. Very few students who take underg
courses in anthropology will go on to become
sional anthropologists. But quite possibly thei
duction to anthropology will be a cornerstone
liberal arts education. Many anthropologists hav
this point. They argue that anthropology, speci
as it does in the study of remote and "foreign" p
is an ideal vehicle for showing the amazing var
ways of life, how culturally relative world viev
how each society accepts its world view as "t
how damaging this perspective can be in a r
changing world, and how liberating it feels to
oneself from the bonds of such ethnocentric thin

We believe, however, that anthropology has s
thing much more subtle and, ultimately, more prof

to contribute to a liberal arts education. In this respect we would argue that it is useful to conceive of anthropology not only as an academic discipline, but also as an intrinsically interesting and pragmatically useful *perspective*. The purpose, then, of an introductory course in anthropology is to provide students with an anthropological perspective that will be useful to them both in their personal lives and in their consideration of larger issues of concern to all humanity.

The Study of Anthropology is meant to be an introduction to college anthropology. It treats the four divisions of anthropology—prehistoric archaeology, physical anthropology, cultural anthropology, and linguistics—and the major topical areas within each subdiscipline, and it presents key concepts and personalities. In presenting the processes and principles of anthropology, the book has taken an eclectic approach, drawing on a wide variety of research studies and many different theoretical approaches—cultural ecology, evolutionism, historical particularism, diffusionism, functionalism, French structuralism, structural-functionalism, etc.

'eatures of the Text

The Study of Anthropology is the first anthropology ·xtbook in which the entire structure—both the structure of the book as a whole and the structure of each apter—has been carefully thought through and signed both to reflect and teach the unique anthrological perspective.

Part I consists of three introductory chapters. apter 1 is unique in itself in its presentation of the thropological paradigm. Chapter 2, "Human Biologi- and Cultural Evolution," presents biological and tural evolution in one chapter in an integrated form: processes of evolution are shown to be identical in h realms (involution and general evolution) but mechanisms, of course, are different. In Chapter 3, e Evolution of Social Forms," the concept of adapta- is used to generate a model of the evolution of al forms, with the adaptive features of each form fully explored and explained.

art II, "Biology and Culture" also consists of three ters. Chapter 6 presents an in-depth consideration

of the biological and sociocultural di
human sexuality that goes far beyond any
sion in any other textbook. And, because
organized around the anthropological pa
cause that paradigm is inherently evol
perspective, and because the central th
evolutionary perspective is a dynamic appr
ing adaptation—there is no awkward cha
to present the myriad of idiosyncratic
approaches to the concept of race. Rathe
of human variation is dealt with in the contex
adaptation, reflecting the most modern tre
human biologists to abandon the static cl
approach in favor of a consideration of
processes.

Part III, "Topics in Cultural Anthropology,
of eight chapters covering communicatio
organization, economic anthropology, politic
pology, control of behavior, belief systems
chological anthropology. Chapter 7 integr
conceptually unifies in a holistic manner ve
nonverbal communication, topics usually tr
separate chapters. In all chapters dealing wit
cultural anthropology, the relevant data from
anthropology and archaeology are introduce
physical anthropology and archaeology are
winding their way through the entire textbo
isolated in a wasteland after having been giv
due.

Part IV, "Issues in the Contemporary World
tains five chapters. Chapter 17 discusses pea
conflict as ends of a continuum of socio
behavior. Where most textbooks focus on warfa
treat it as a form of social pathology, this chap
plores the systematic relationships between v
levels of aggression and peaceful behavior, and
the steps that must be taken to convert the form
the latter. Chapter 19 is a full discussion of the
and political contexts in which anthropology deve
as a discipline and in which it currently is active
ethical issues that arise from these consideration
explored through the use of extended case exa
at a much greater depth than is usual in introdu
texts.

Finally, Part V contains five full chapter case stu

The groups described in the case study chapters have been carefully selected to represent diverse levels of sociocultural evolution, especially with regard to subsistence strategies. They provide students with extended bodies of data against which they can test the theoretical materials they learn in the other sections of the book.

In creating *The Study of Anthropology* we emphasized making the book *readable*—an effective and enjoyable vehicle for learning. Thus, great attention was devoted to the book's structure, to writing style and to providing numerous case examples. The textual material was carefully coordinated with an extensive graphics program including photographs, maps, figures, models, tables, charts and diagrams which both illustrate and add to the text. Unusually long and comprehensive caption materials—frequently self-contained essays—amplify and complement text materials. Finally, each chapter ends with a summary and an annotated bibliography. The glossary, located at the back of the book, contains more than 600 definitions.

Because of the book's unique structure, *The Study of Anthropology* can easily be used in courses of various lengths; in one semester and two quarter-length courses as well as in the more usual two semester sequence.

The Study of Anthropology will be revised and updated regularly, not only in response to changes in the discipline but in response to the feedback we receive from both instructors and students who have used the book. To facilitate this feedback we have inserted a Response Card at the back of the book. Please take a few minutes to fill out the card and mail it in to Harper and Row.

knowledgements

As with any project of this scope, there are many people who have contributed, both directly and indirectly, to its creation. The thirteen contributors to the book, of course, must go at the top of our list for their fine work and for their patience in putting up with demanding schedule. A debt of gratitude is also owed to the students in David Hunter's classes, who participated in the classroom testing and evaluation of all chapters in the book, and whose criticisms helped

bring about several important revisions. (Boston University), Malcolm McFee (Ur Martin K. Nickels (Illinois State Uni Otterbein (S.U.N.Y., Buffalo) review chapters and provided cogent insights feedback that helped greatly in improvi of the book. We are also indebted to I whose fine scholarship and editorial sl tremely helpful to us. We would also li our thanks to Adam Curle, Irving Lou Malcolm McFee, Jack Pierce, Leopold Pos L. Roe, and Edward H. Spicer—mentors, cc friends.

Bill Eastman, our editor for this book a rial Director of Harper & Row's College deserves a special vote of thanks for his ec tance and wise advice during all stages o preparation. Ken Burke has done his usual job in designing and producing *The Study pology*. We would also like to express our a to Sandy Craig for her fine editorial wc Butterfield, the designer of the book, Bar the illustrator, and Audrey Ross our photo ec Palmer, Bev Hower, and Ronna Greif did exc under severe time constraints in typing the n Finally, Gayle Johnson Whitten and Russe deserve a special mention for their patience understanding.

David
Phillip

Contents

I Introduction

1 The Study of Anthropology
by Phillip Whitten and David E

The Historical Roots of Anthropology 2
The Ancient World
Medieval Perspectives
The Renaissance and the Enlightenment
The Nineteenth Century
The Twentieth Century

A Paradigm for Anthropology 12
What Is Science?
Anthropology as a Social Science
The Comparative Theme
The Holistic Theme
Systems and Processes
The Folk Perspective–Analytical Perspectiv Dichotomy
The Emphasis on Case Studies

The Organization of This Book 18
The World Context
Theory
Analysis
Conclusions

mma y 20

man Biological and Cultural Foundations 22
by David E. Hunter

e Concept of Evolution 22
History
General Principles

e Dynamics of Evolution 28
Biological Evolution
Mutation
Random Drift
Gene Flow
Natural Selection
Summary
Cultural Evolution
Invention
Diffusion
Summary

e Remains of Our Ancestors 38
The First Hominids
The Origins of Human Culture
The Great Expansion
The Arrival of *Homo Sapiens*

pective 64

mary 66

Evolution of Social Forms 68
by M. Kay Martin

an Social Origins: Myth and Science 68
he Classificatory Approach
he Adaptational Approach

al, Labor, and Societal Origins 73
abor Specialization and Nonhuman Primate Society
abor Specialization and Early Human Society

mic Adaptations and Social Forms 78
raging Societies
Similarities among Foraging Groups
Differences among Foraging Societies
rticultural Societies
Subsistence Farmers
Surplus Farmers

Pastoral Societies
Agricultural Societies
Industrial Societies
Summary 92

II Biology and Culture

4 Primatology and Human Nature
by Alison

The World Context 96
Origins and Development through Tim
Contemporary Examples
Theory 105
Systems
Processes
Analysis 108
Conclusions 112
Schools of Thought
Author's Conclusions
Summary 115

5 Human Adaptation: Biological and Cultu
by Alison F

The World Context 116
Origins and Development through Time
Physical Anthropology
Cultural Anthropology
Summary
Contemporary Examples
Theory 124
Systems
Processes
Demographic Studies
Genetic Studies
Social Studies
Ecological Studies
Summary
Analysis 130
The Folk Perspective
The Analytical Perspective

onclusions 133
Schools of Thought
Author's Conclusions
mmary 137

uman Sex: Biological Bases and Cultural
ameworks 138
by Barbara Voorhies

e World Context 138
Origins and Development through Time
Contemporary Examples
The Tchambuli
The Mountain Arapesh
The Mundugumor
The Balinese
heory 143
Systems
Processes
The Ibo
nalysis 152
The Folk Perspective
The Analytical Perspective
onclusions 156
Schools of Thought
Author's Conclusions
ummary 158

opics in Cultural Anthropology 159

Communication: Verbal and Nonverbal 164
by David E. Hunter

The World Context 164
Origins and Development through Time
Language
Contemporary Examples
Nonverbal Communication
Theory 175
Systems
Processes
Analysis 180
The Folk Perspective

The Analytical Perspective
Conclusions 184
Schools of Thought
Author's Conclusions
Summary 186

8 Social Organization I Marriage
h

The World Context 188
Origins and Development thro
Contemporary Examples
Greece
Alaska: The Tlingit
United States: The Blackfe
Africa: The Swazi
India: The Nayar
Australia: The Tiwi
Comparison and Summary
Theory 196
Systems
Processes
Analysis 200
The Folk Perspective
The Analytical Perspective
Conclusions 204
Schools of Thought
Author's Conclusions
Summary 206

9 Social Organization II Kinship
E

The World Context 208
Origins and Development thro
Contemporary Examples
Theory 214
Systems
Processes
Analysis 223
The Folk Perspective
The Analytical Perspective
Conclusions 225
Schools of Thought

Summary 228

10 Subsistence and Trade Economies: An Anthropology 230
by David E. Hunter

The World Context 230
Origins and Development through Time
Contemporary Examples
Arnhem Landers and the !Kung San
The Ik

Theory 237
Systems
The Organization of Work
Processes
Subsistence Strategies
Distribution Methods

Analysis 246
The Folk Perspective
The Analytical Perspective

Conclusions 248
Schools of Thought
Author's Conclusions

Summary 252

11 Power in Society: Political Anthropology 254
by Anthony S. Kroch

The World Context 254
Origins and Development through Time
Contemporary Examples
The Lugbara
The Trobrianders
Bunyoro

Theory 263
Systems
Processes

Analysis 266
The Folk Perspective
The Analytical Perspective

Conclusions 271
Schools of Thought
Author's Conclusions

Summary 273

12 Behavior Control: Formal and Inform
by D

The World Context 274
Origins and Development through T
Contemporary Examples
The BaMbuti
The Kapauku

Theory 282
Systems
Positive/Negative Sanctions
Formal/Informal Sanctions
Law
Processes
Organized/Diffuse Processes
Primary/Secondary Processes

Analysis 287
The Folk Perspective
The Analytical Perspective

Conclusions 289
Schools of Thought
Author's Conclusions

Summary 293

13 Belief Systems: The Sacred and the Profan
by David F

The World Context 294
Origins and Development through Time
Contemporary Examples
A Lake City Sect
The Yanomamö
The Kapauku Papuans
The Trukese

Theory 301
Systems
Processes

Analysis 306
The Folk Perspective
The Analytical Perspective
Shaman-Patient Relationship
Shaman-Public Relationship
Patient-Public Relationship
The Shaman's Experience

Conclusions 311

Schools of Thought
Author's Conclusions
ummary 315

ulture, Identity, and the Individual
sychological Anthropology 316
by James A. Clifton

ne World Context 316
Origins and Development through Time
Contemporary Examples
A Winnebago Indian
An Ojibwa Indian
A Native American of the Southwest
A New Guinea Tribesman
A Mapuche Indian
heory 324
Systems
Processes
nalysis 329
The Folk Perspective
The Analytical Perspective
onclusions 333
Schools of Thought
Author's Conclusions
ummary 335

ssues in the Contemporary World 336

ocial Stratification 338
by Ian Robertson

he World Context 338
Origins and Development through Time
Contemporary Examples
India
United States
Soviet Union
heory 348
Systems
Processes
nalysis 351
The Folk Perspective

The Analytical Perspective
Conclusions 356
Schools of Thought
Author's Conclusions
Summary 358

16 Modernization in the Third Wo
by H

The World Context 360
Origins and Development thr
Contemporary Examples
Turkey
Indonesia
Nigeria
Theory 367
Systems
Processes
Analysis 370
The Folk Perspective
Sierra Leone
Nigeria
The Analytical Perspective
Conclusions 374
Schools of Thought
Author's Conclusions
Summary 379

17 Peace and Conflict
by David E Hunter a

The World Context 380
Origins and Development Thr
Egalitarian Society
Rank Society
Stratified Society
The State
Contemporary Examples
The BaMbuti
The Jalé
United States
Theory 390
Systems
Conflict

Awareness of Conflict
Balanced Relationships
Unbalanced Relationships
Processes
Analysis 397
The Folk Perspective
Chest Pounding
Side Slapping
Club Fights
Spear Fights
Raids
The Analytical Perspective
Conclusions 403
Schools of Thought
Author's Conclusions
Summary 406

18 Urban Life 408
by Nancy Gelhute

The World Context 408
Origins and Development through Time
Contemporary Examples
Lima, Peru
Bombay and Bangalore, India
Washington, D.C.
Medan, Indonesia
Los Angeles, California
Theory
Systems
Processes
Analysis 420
The Folk Perspective
The Analytical Perspective
Conclusions 424
Schools of Thought
Author's Conclusions
Summary 427

Social Research and Ethics 428
by Anthony S Kroch

The World Context 428
Origins and Development through Time

Contemporary Examples

Theory 436
Systems
Processes

Analysis 439
The Folk Perspective
The Analytical Perspective

Conclusions 443
Schools of Thought
Author's Conclusions

Summary 445

V Case Studies

20 Fieldwork I: Participant Observation in Swiss Peasant Community

by David

Introduction 448

The Environment 449

The Group 450
Subsistence Activities
Social Organization
Culture

Problems and Prospects 464

Summary 466

21 The !Kung San: A Hunting and Gathering Community

by Richard

Introduction 468

The Environment 470

The Group 470
Subsistence Activities
Social Organization
Culture

Epilogue 484

Summary 484

.. ..e.o Saud A ab a Pas a No n d 43
b Fede o S V

nt oauc on 486

The Env .onmem 488

The Group 490
Subsistence Activities
Social Organization
Culture

Problems and Prospects 503

Summary 504

23 Takatoya A Japanese Peasant Community 506
by Stuart E Guthrie

Introduction 506

The Environment 507

The Group 508
Subsistence Activities
Social Organization
Culture

Problems and Prospects 520

Summary 523

24 Onitsha, Nigeria, An African Urban Community 524
by Richard N Henderson

Introduction 524

The Environment 525

The Group 526
Subsistence Activities
Social Organization
Culture

Problems and Prospects 544

Summary 545

25 Fieldwork II Applied Anthropology Among Wisconsin's Native Americans 546
by James A Clifton

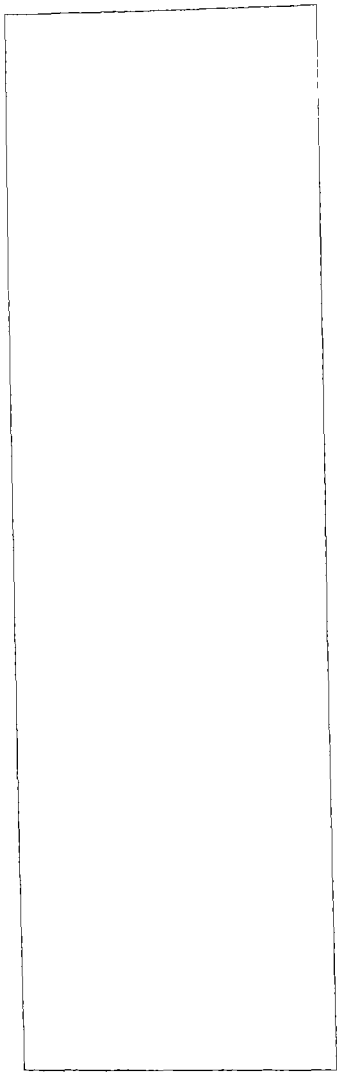
Introduction 546

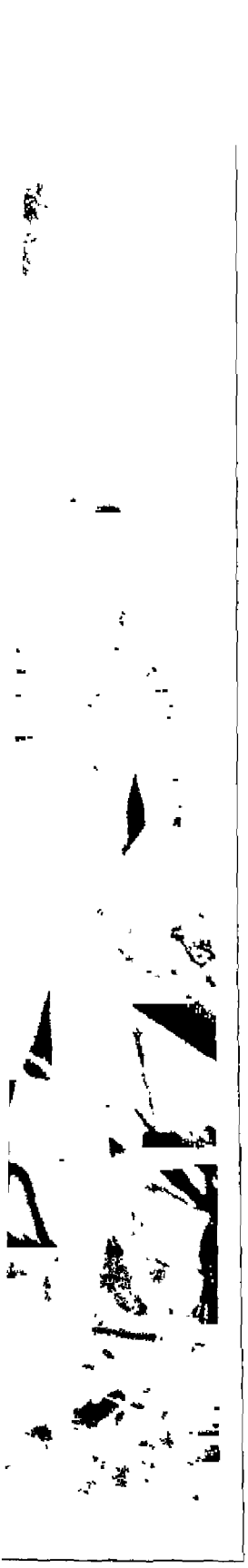
The Environment 550

The C
S
S
C
Proble
Summ

Bibliog
Glossa
About
Index 6

Part I





1
The Study of Anthropology

The Historical Roots of An

Anthropology is the systematic inv
nature of human beings. The term d
Greek words: *anthropos*, meaning "
meaning "to study."

The scope of anthropology is vas
including such subjects as the superna
isolated tribe in the Brazilian jungle,
of an African pigmy, the evolving sha
jawbone, the social behavior of our
the grammar of an English sentence,
rites of Australian aborigines, the ph
between Eskimos and Arabs, the posi
modern America, the social struct
society, and the taboo that inhibits
sexual intercourse with close relati
subject matter of anthropology is a
fascinating as humanity itself.

The origins of anthropology can b
the classical civilizations of Europe
East. Early travelers and philosopher
forms of society differed from place
the body shapes and skin colors of
well. These observations led to sp

humar
of hu
traced
the tw

The A

Perl
perspe
Greek
the fi
create
under
arguec
religio

The
differe
425? E

gist Irven DeVore measuring
t of water used in a day by a
Kung hunters in the Kalahari
outhern Africa The hunters
water in ostrich egg shells
n shirt and shorts, is a Bantu
This kind of careful, quantita-
ch is becoming standard
anthropological fieldwork



some f t d e r f [e l
an ys we ru le but l []e
enough to satisfy modern standards,
cally described the environment in
lived, their physical characteristics, l
tions, customs, laws, political organi
practices, and religious beliefs. Althou
that the Greek way of life was superi
he understood that all people feel a lov
society and way of life. Thus Herodotus
one of the fundamental propositions o
All human groups are *ethnocentric*—tha
their own way of life to all others ar
groups' life-styles (usually negatively) ir
own value system (Malefijt 1974:5–6).

As Greek society became transform
states such as Athens, the political dut
demanded that they understand the nat
Social thought flourished. Socrates (who
in 399 B.C. for the "dangerous" influenc
on young people) and his student Plato (
refined social, political, and cultural anal
degree that their work can still instruct

The nature of human society contin
subject of concern throughout classica
anthropology did not develop as an ident
science for many centuries. One reason wa
the perspective and value system of Wes
tion after the fall of the Roman Empire in
the fifth century A.D.

ınts of "foreign" peoples
d and distorted them,
their physiques and life styles
/ to Europeans. This practice
ınocentrism and is well
ɔy this page from Sir Thomas
avalle into Atrique and Asia
/as published in 1634 and
ɔ of the earliest commen-
· Hottentots of South Africa
m is a universal practice



Medieval Perspectives

As the Roman Empire gradually collapse
optimism of the classical civilizations evap
the time of Augustine (A.D. 354–430), Rom
was disintegrating, and a new view arose: t
beings are inherently alienated from divine
and order.

In Augustine's view, the cosmos was not
with man. The universe was made by an
otent and perfect Creator, who was al
scrutable, and His work and purposes
never be fully understood by man. It wa
useless to study the universe and nature,

was similarly superfluous to study society. . . . Coercive social institutions such as the monogamic family, laws, government and slavery were divinely instituted after sin had entered the world, both as punishments and as remedial measures to counteract man's evil will. The study of man's social life was thus useless, because the only thing that mattered was God, His commands to man, and man's relationship to the Divine. Greek ethics had been man-centered, aimed at happiness through correct social behavior. In the Christian view social behavior was to be judged not by men but by God (Malefijt 1974:25).

The period of chaos following the fall of Rome did little to promote serious social studies. Much of the wealth of knowledge and philosophy produced by the classical civilizations was lost to the wider society and survived only in small, enclosed communities of monastic scholars in remote settings on the fringes of pagan European society (Clark 1969:7–8).

Not until the twelfth century A.D. were the classical works rediscovered by large numbers of European scholars. Once more there was room for optimism. Thomas Aquinas (1225–1274) conceived of a universe in which humans were rational beings of great potential who occupied a place just below the angels. Aquinas was concerned with two opposed characteristics of humans, which gave them a dual nature. On the one hand, humans come close to the angels in their ability to acquire knowledge and apply it; on the other hand, they share with the animals a base sensuality. This paradox of the *dualistic nature* of the human species continues to occupy a central position in anthropological debate; it has been highlighted in recent years by those who attempt to explain human behavior in terms of observations of animal behavior (see chap. 4). Although medieval scholars fixed their eyes firmly on the Creator in heaven, they nevertheless knew that they were members of human society, and they gave their social environment careful contemplation. An interest in history and especially in non-European peoples developed and was encouraged by the adventures of merchants and Christian missionaries. This period produced works describing a wide variety of foreign peoples and their customs, as well as attempts to account for the development of organization, the nature of legal systems, the origin of kings, and other social phenomena. These concerns, if not the beginnings of anthropology, are certainly discernible in medieval times (Harris 1974:30–35). These concerns are perhaps best represented by the writings of the explorer Marco Polo (1254?–1324?), who served seventeen years at the court of the Kublai Khan and described in remarkable detail Asian customs, practices, and social institutions.

The Renaissance and the Enlightenment

In 1453 the Roman Empire in the East fell to Islam, and thousands of refugees fled to western Europe, bringing with them the knowledge of most of the classical philosophers. The invention of the printing press using movable type by Johann Gutenberg of Mainz, Germany, and the publication of the Bible, the first (surviving) dated book were of tremendous importance in this context. The treasures of classical learning could now be—and in fact were—cheaply printed in quantity and made available to large numbers of people.

Europe became infatuated with the classical civilizations. Excavations were undertaken to retrieve lost works of art, Greek and Roman texts were studied, and new buildings were executed in terms of classical aesthetic principles. This preoccupation led to a reawakening of interest in studying society, since much of classical literature focused on this subject. In 1513 one of the most famous works of political science—Niccolo Machiavelli's *The Prince*—was published, an event that marked a trend to consider society as a separate phenomenon, independent of religious and ethical assumptions (Garraty and Gay 1972:489).

This period also saw the widening of European horizons. Monarchs came to appreciate the potential benefits of world trade and subsidized exploratory expeditions. Accounts of these voyages were eagerly read and included descriptions of the physical appearance, dress, customs, political systems, religions, and dietary habits of the "strange," remote peoples who were being discovered by an expanding European civilization. The information contained in these often incorrect and distorted accounts was used by social theorists to compare and

"primitive" society with that of Eur
understand basic social processes.

Modern anthropological theory h
ginnings in the period of Western civili
the Enlightenment—that is, the hundr
between the publication of John Lo
Concerning Human Understanding (
eruption of the French Revolution. Loc
essay contains many concepts that twe
students of human behavior still use. It
among other things, that people are bo
or empty minds, and that they learn
through their enculturation into groups
innate ideas—all knowledge is learned
personal experience. Marvin Harris en
radical implications of this position. "No
is based upon innate truths; a change in
ment [be it the social or natural environ
in a change in behavior" (1968:12). But I
followers failed to follow their theme
end. Although they understood that idea
(rather than innate) and hence relative to
they firmly believed in moral universals
all societies in terms of the ethical ar
"truths" of their own civilization.

The Enlightenment was marked by li
about the nature of the human species an
societies. The arguments were far from triv
Hobbes's (1588–1679) pessimistic assumpt
the inherent selfishness of human beings w
defend the doctrine of despotic rule by
—without which life would be "nasty, br
short." On the other hand, the liberal ph
following John Locke (1632–1704) advocat
cratic institutions in the belief that the hum
had a much nobler potential.

By the eighteenth century such fathers o
social science as Montesquieu (1689–1755)
vanni Battista Vico (1668–1744) could at
describe evolutionary stages, sequences of s
velopment, and "natural laws" governing
society without reference to divine control
This trend was perhaps climaxed by the work
Jacques Rousseau (1712–1778), who argued
Social Contract (1762) that political organiza

(1632–1704) English social
In his writings Locke
at people are born with
pty minds, and that they
y know through enculturation
Rejecting the concept of
Locke and his followers
ne concept of culture as the
ch person's knowledge of
is perspective was opposed
lobbes (1588–1679) who
umans are inherently selfish
this debate still find their
lay, with most anthropolo-
behind Locke while some
udents of animal behavior)
es' tradition.



ich Marx (1818–1883) German
osopher, who insisted that
ory and social practice (political
) must constantly inform each
's Marx and his collaborator
ngels issued the Communist
—their famous analysis of the
ic class relations to be found
capitalist (industrial) economic
1848 when Europe was rocked
spheaval and revolution They
ly neutral bystanders The
ends with a ringing call to
/ORKING MEN OF ALL
ES, UNITE!"



power ultimately are based on—and re
legitimizing force of popular will. T
social conclusions that could be drav
doctrine helped lay the groundwork
thought and practice in the Ameri
revolutions and the subsequent soci
the nineteenth and twentieth centuri

The Nineteenth Century

The last part of the eighteenth ce
first half of the nineteenth century were
in the history of the West. The Ame
rebelled against British rule in 1776, a
Revolution (1789–1799), inspired by th
Rousseau and the immediate exampl
threw Europe into convulsions of strug
series of abortive revolutions occurred ir
the German states, and the Austrian Emp
classes in these countries allied to crus
tions, but not before social theorist Karl
colleague Friedrich Engels published Th
Manifesto (1848) and propelled social
trievably into the political arena.

This era saw the expansion of Europea
Africa, Asia, and Latin America, coupl
intensification of missionary activity. The
peoples of the various empires were s
described by missionaries, military person
colonizers who exploited the economic
these countries and their inhabitants. As in
sance, Western "armchair" social philoso
this information to explain the nature of hun

Many scholars trace the invention of mo
science to Claude Henri de Rouvroy, Comt
Simon (1760–1825), and Auguste Comte (1
These collaborators set out to develop a "
man" in which a "social physics" would le
discovery of underlying, unifying principles co
to the principle of gravity, which had exp
much in the natural sciences. Comte believe
discovered such a unifying principle, that soc
tists were now in a position to create a new
knowledge called *positivism*, which embo
scientific method with its built-in tests for tr

!) German born,
hematics, physics,
r becoming inter-
st Coast Indians, he
gy. His early
scientist made him
lative theory-
m foundation in
rofessor at Columbia
eath he taught
nerican anthropol-
ed Kroeber, Robert
dward Sapir,
Ruth Benedict, Ruth
ill, Ashley Montagu,
to concentrate on
iata—ethnographic,
gical, and biological—
time in constructing
to his influence,
volution, very strong
was for many years
ited States

When Marx and Engels put forth thei
antagonisms built into the class structu
society, they were following the course
by Rousseau, Saint-Simon, and Comte
lieved that they had discovered scienti
ing the workings of society. They based
on an analysis of contemporary Europ
English) industrial society. However, t
that the evolution of social forms,
constructed from the information
collected about the "primitive" world,
of their views (Engels 1884). Althoug
"primitive" societies has since been sh
fantasy than fact, the Marxist analy
capitalism continues to influence la
social scientists, and the social moven
ism has inspired have had a continuing
on the modern world.

With the dramatic emergence of
evolution on the European intellectu
(see Chap. 2), interest in the "primi
the world increased. Anthropology can
a separate professional and academic
the second half of the nineteenth ce
sought reliable information about so
nologically less developed peoples. Th
this information could be used to
from which modern industrial society
have evolved. An era of ambitious co
commenced, covering areas such as ju
example, Sir Henry Maine's *Ancient L*
systems (for example, Lewis Henry Mo
Consanguinity and Affinity of The Hur
and religion and other elements of
ample, E. B. Tylor's *Primitive Culture*
the Development of Mythology, Phil
Art and Custom, 1871).

Two major approaches to the com
tive emerged in the latter half of
century. One approach—often calle
classical evolutionists—focused on
progress. Followers of this approa
arrange what was known about diff
terms of *time* in the hope that a univ
sequence of social forms would be

E. B. Tylor, Lewis Henry Morgan, I
other similarly inclined scholars
assumed that cultural developn
followed definite laws—unfoldir
the simple to the complex and c
institutions of western Europe
tures were of interest mainly
illustrated points along the path
ress; once this path was fully la
of culture would be complete

(1858–1917) Both
and sociologists trace
roots through Durkheim
writings include both 19th
nary interests and a very
terest in how societies
or works dealt with
sion of labor in society
on), and suicide
ten, of social

The second major comparativ
geographical *space* rather than on
tradition were concerned with t
distribution of cultural traits in
areas. They emphasized "the impo
environment in cultural developm
diffusion and migration in brin
similarities" (Eggan 1968:123) (see
tories" that this group of resear
were often incompatible with tho
ists. Because anthropological the
veloped sufficiently to enable schol
relative merit of these two appr
(1858–1942), the "father of Ameri
called for an indefinite halt to th
theories. By emphasizing the impo
taking collection of accurate ethn
led anthropologists from Victorian
and thus led anthropology into th

The Twentieth Century

Bridging the nineteenth and twe
the French social scientist Émile
1917). He was interested in the way
themselves, the manner of their
modern sociology and anthropolo
roots in his writings, which deal w
theoretical issues, including prim
lems of social organization and grou
difficulties that modern society pos
who is struggling to find a meanir

Since the turn of the centur
developed into an increasingly com
academic discipline. Less and les



Bazett Leakey (1903–1972)
ologist, Leakey along with
olleague Mary Leakey, was
some of the most
finds in the hominid
Gorge in Tanzania the
he skull of a hominid
anthropus (now classified
cus robustus—see Chapter
ited as being what was
le 1.75 million years
d other subsequent
their famous *Homo*
eys constantly forced
current theories of
Their son Richard
to do so (see Chapter 2)

trends tied to one particular scholar; few g
the field of anthropology today. However,
presenting a large cast of characters in th
tion, we shall introduce contemporary anth
in the context of their contributions to the
Some anthropologists will appear repea
mony to the broad range of their interes
versatility and usefulness of their theories
we shall simply outline the four major s
anthropology that have emerged in the
century: physical anthropology, archaeolo
tics, and cultural anthropology.

Physical anthropology deals with huma
across space and time. It is divided into t
paleontology, the study of the fossil ev
primate (including human) evolution, and ne
the comparative biology of living primates,
population and molecular genetics, body sha
phology), and the extent to which behavior i
cally programed.

Archaeology is the systematic retrieval and
of the physical remains left behind by huma
including both their skeletal and cultural

.eological excavation at Maiden
ngland. The excavation of a
ver destroys it, thus archaeol-
ust collect their data in such a
t they can record the exact
of each object. The vertical and
tal spacial relationships of all the
ntents are called the *structure* of
and are very important variables
preting the remains. At this site,
imer Wheeler, an eminent
archaeologist, carefully excavated
er (stratum) of the site one at a
recorded the positions of
remains in reference to a
laid out grid. This is a standard
logical technique known as
al, grid-type excavation

Both th
includin
Lingu
time. *Hi*
of lingu
language
attempts
language
intelligib
Cultur
perspecti
concerne
organizati
In technic
the social



as *ethnology* is the comparison of such descrip-
or the purpose of generalizing about the nature
human groups.

we mentioned before, you should know about
schools of thought and many individual theories
eorists if you are to have a basic knowledge of
pology. However, rather than present all these
es, concepts, and personalities in the abstract,
book we present them in the context of chapter
sions of real issues and problems. We hope that
ill thus become more meaningful to you.

Paradigm for Anthropology

Is Science?

pirical science has two major objectives: to
be particular phenomena in the world of our
ence and to establish general principles by means
ch they can be explained and predicted" (Hem-
52:1). What sets science apart from other belief
s is that it includes rigorous standards for testing
th of findings (see Chap. 13). Nevertheless, it is
nt to scientists who have examined carefully
ey arrive at their "truths" that the story is a bit
complicated than most people believe.

ough most of us accept that there is in fact a
"out there" that can be described, we are be-
g increasingly aware that the ways in which
sts describe that world are as much a product
ir approach to observing and measuring it as a
ion of what is "really" out there. The argument
en be taken one step further: The theories that
cepts can determine the nature of one's observa-
which in turn can determine the nature of the
hat are recorded. Thus although we often think
ta of scientific research are somehow objective
utral, this is far from true (Heisenberg 1971).

s perspective has been forcefully advanced by
as S. Kuhn, who in 1962 published a controversial
called *The Structure of Scientific Revolutions*.
observes that any scientist works in terms of a
existing beliefs and practices that are specific
or her discipline. Kuhn calls such a set of beliefs
ractices a *paradigm*. A paradigm represents the

Margaret Mead (b. 1901) Among
America's most famous anthropolo
Margaret Mead is respected not on
her ethnographic research in such
as Samoa and New Guinea but als
her insistence on applying her anth
pological perspective to contempor
America. Especially in the area of
and personality, her contributions
study of sex and gender identity an
dynamics of the transmission of cul
endure as guideposts for anthropol
research

discipline—expressed in basic
ations, methods of research
ruments used for measuring
igm defines the problems of a
iate research methods, the
ıre gathered, and the kind of
ally produced.
ork in a particular discipline
he same education, and thus
fairly standardized version of

the
same
that
of sc
rand
atten
lems,
solvi
O
para



existing assumptions. If serious anomalies of this kind occur, the paradigm may start to crumble, and scholars must then modify it or develop a completely new one. This process, in Kuhn's language, is a scientific revolution. An example from physics was the replacement of the Newtonian paradigm by Einstein's paradigm of general relativity; now this latter paradigm is being challenged by the paradigm of quantum mechanics. Thus scientific progress in a discipline takes place through two distinct processes: the gradual accumulation and organization of knowledge under one paradigm, and the eventual replacement of each paradigm by another. In brief, the scientific method is a cultural system that can be described and analyzed like any other cultural system, making its basic structure—its paradigm—clear.

Anthropology as a Social Science

A paradigm is by no means easy to describe or identify. It is not a simple, unified statement or position. Rather, it is a perspective, or to be more precise, a set of themes or dimensions. It is also a set of practices that recur in various forms and combinations hroughout the training, research, and writings of an cademic discipline. These themes and practices comine to structure the world view of those within the liscipline.

Anthropologists share and participate in such a aradigm (Hunter and Whitten 1975). Although each of s may choose to emphasize one aspect more than nother, we nonetheless perceive our work in relaonship to this paradigm's entirety; we understand ow our work fits in with the work of other anthropolists, and how all anthropological research and iting contribute to the process of refining and imoving this perspective.

What, then, is the anthropological perspective? rtainly it is not to be found among the various -isms t fragment the discipline; it is not structuralism, ctionalism, evolutionism, historicism, or any other ool of anthropology that you will learn about in this k. Nor can the paradigm be found on the grander l of generalizations or laws about human behavior. se generalizations are either banal (for example,

Bronislaw Kasper Malin Polish born Malinowski Ph.D. both in physics a before he became inter pology and received his London School of Econo British Museum. Caught the outbreak of World W was interned for the dur Trobriand Islands off the New Guinea. He made g time, engaging in the mo and sophisticated piece o field research that had ev achieved by a trained anth this day, his ethnography anders remains as a standa lence—both in its wealth o the way Malinowski percei scribed the interrelations o of the culture. His attempt his fieldwork methodology which he called *functionali* very influential in its impact anthropology and sociology numerous weaknesses, espe attempt to establish a one-to matchup between biological cultural responses

lepend more on culture and have
'al complexity more than any other
ious (for example, all cultures show
ınge, but at the same time also show
ınserve themselves); or are contro-
'om accepted by all, or even most,
(for example, human beings are
e).

ogical paradigm can be seen as the
're themes that recur throughout the
logical work. Not all anthropologists





work in terms of all five themes by
anthropologists appreciate the im
theme. Further, this particular comb
differentiates anthropology from
sciences and is the core that mak
practice of anthropology especially in
world. The five themes that form th
paradigm are: the comparative the
theme, the concentration on system
emphasis of the dichotomy between t
tive and the analytical perspective, ar
on case studies.

The Comparative Theme Moder
has its roots in the nineteenth century,
During that colonial period, some of
merchants, and missionaries describec
ways of life they were discovering, and
of ethnographic material was amassed.
these descriptions were analyzed and
compared by scholars in Europe or i
States did anthropology begin to emerg
discipline. This comparative theme has
enduring characteristic of anthropology.

Although many anthropologists devot
of their time to ethnography—the stud
group, community, or archaeological sit
context—even these individuals acknowle
long-term aim of anthropology is to accu
cient ethnographic data to enable the c
arrive at meaningful, scientific laws des
behavior of people everywhere. Such laws
to rely on generalizations arising from the
analysis and comparison of data from a v
of cultures (ethnology).

Anthropologists use two dimensions of c
in their work: *synchronics*, the systematic c
of ethnographic materials across a wide ran
tures at one arbitrarily selected point in
diachronics, the comparative study of cu
society as they change through time in a
geographical area. From synchronic studies
about the regularities of human behavior ar
world at a particular time, usually the prese
recent past. From diachronic studies we lea
the evolution of human beings and their

o be an anthropologist without
ist—at least to the extent that
importance of understanding
n any particular way of life and
h led up to it. These develop-
l (particular to the given case)
iting patterns of change that
developments at other times

The Holistic Pe
simplistic, reducti
nomena, instead t
nomenon into acc
to understand hu
logical, social, c
political, ecological
pologists are thus s
behavior. This holi



apart from sociology, which often
patterned social behavior and such cu
norms and values. It also distinguishe
from psychology, which, anthropol
ignores cross-cultural, comparative da
almost entirely on psychological data,
ministic dependence on biological infor
is available.

Systems and Processes Early anthr
consisted of static, ethnographic descri
tively isolated communities. Where t
expanding industrialism had already wro
changes in the traditional life-styles of r
these bygone ways of life were recreated
to readers in the eternally frozen form
nographic present" (that is, as if thing
changed).

A major current trend in anthropolo
away from such static descriptions to a con
continuing processes. Anthropology app
study of human behavior through the syste
tribute to it: the biological system, so
cultural system, psychological system, a
mental system. Analyzing the internal dyna
system and the processes of interaction am
is one of the most important tasks of an

The Folk Perspective-Analytical Perspec
omy Traditionally, anthropologists have
mote peoples whose patterns of life are ve
from those of Western civilization. As a re
cross-cultural nature of so much of anthr
fieldwork, students of the profession have
had to acquire a working knowledge of
—both practical and theoretical—in order to
language of the peoples they study. Moreov
pologists are confronted with the difficulty o
ing the cultural world of their subjects into
of Western knowledge. For these reasons
has had a great impact on anthropology.

Because the issue of translation is such
one—both for the fieldworker attempting t
stand a new language and for the author atten
make his or her data meaningful to other
—anthropologists have been forced to deal ri
with the distinction between the world view

San Carlos Apaches Anthropologists are
interested in knowing the small details
which add up to the unique life
experiences offered by every culture
Thus much of our research consists of
detailed case studies using the participant
observation research method In which
the researcher is immersed in the
ongoing daily life of the group she or he
is studying. This approach to social
research has made anthropologists
acutely aware of the different concep-
tions, understandings, and points of view
which separate them from the people
they study For example the anthro-
pologist describes the event pictured
here as "A HARD LIVING. An Apache
woman chips away at rocks on the San
Carlos Apache Indian reservation in
Arizona, in search of semiprecious
peridot These green stones are found in
large deposits at a mesa on the reserva-
tion, and digging for them helps a few
Indians eke out their meager existence."
However only very careful and sensitive
research will enable us to discover the
participants' conception of the situation
The former description we call the
analytical perspective, the latter is the
emic perspective.

subjects and their own assumptions. In order to keep these two sets of phenomena separated, anthropologists have followed linguistics in distinguishing between *emics* and *etics*. *Emics* is the set of related categories through which the anthropologist's subjects perceive the world; in this book we refer to emics by the term *folk perspective*. *Etics* is the set of related categories used by Western social scientists to explain social phenomena; we refer to etics as the *analytical perspective*.

Keeping folk and analytical perspectives separated is a difficult task whether one is doing research or analyzing the data afterward. Because they so often face this problem, anthropologists are extremely sensitive to the relativity of cultural patterns. They attempt to appreciate the life-styles of their subjects on the subject's own terms, avoiding *ethnocentrism*—the complacent assumption that the ways of one's own society are the only correct ways—in favor of a research methodology of *cultural relativism*—a nonjudgmental approach to studying each human society.

The Emphasis on Case Studies As anthropology developed, its research tended to focus on relatively small, isolated, foreign social groups. The research technique that anthropologists developed and relied on is called *participant observation*. In this method, anthropologists immerse themselves in their subjects' way of life and at the same time attempt to observe, describe, and analyze objectively the social behavior and culture of their subjects. This approach is often necessary because formal research tools, such as questionnaires, cannot be developed without some prior knowledge of the society and its language.

One weakness of the participant observation approach is the tendency of the researcher to become emotionally involved with the community he or she is studying, perhaps rendering the data less objective than would be desirable. Another possible consequence is that the experience of participant observation may become a crucial episode in the anthropologist's life, assuming the character of a rite of passage and influencing his or her life's work. This attachment to fieldwork experience has an interesting effect. Few anthropologists are content solely with masses of data subjected to complex statistical analysis; rather, they look for the concrete social fact—the item of behavior, the description of a recognizable exp to anchor an understanding of so other words, although anthropologis power of statistical analysis as much scientists, they are oriented toward tions of setting (whether prehistoric and behavior which are to be found

Some people believe that this or anthropologists too particularistic; t anthropology from embracing grand, that bear little relationship to social to-earth perspective might prove to b future, helping social science to e politically and socially and contributin tion of the important social questions

The Organization of This Be

The importance of learning structu mastering facts and techniques has bee consistently by psychologists who have learning processes. In his seminal book *Education*, Jerome Bruner argues that th of a subject should be determined "by the mental understanding that can be ach underlying principles that give structure ject" (1960:31). Structure, he states, is at t the classic problem of the transfer of lea facts and details are placed into a structu they are quickly forgotten:

> There are many things that go into . . . [the structure of a discipline], not of which are supporting habits and sk make possible the active use of the one has come to understand. If earlier is to render later learning easier, it must providing a general picture in terms o the relations between things encountered and later are made as clear as possible (1

The five dimensions of the anthropolo digm are:

1. The comparative theme
2. The holistic theme
3. Systems and processes

4 Folk perspective-analytical perspe
5 The emphasis on case studies

We have organized this book (with the
first three chapters, which are introdu
this basic structure. Thus, as you read
will learn the processes of inquiry
discipline of anthropology—in effect,
learning to think like an anthropologist

Specifically, chapters 4–19 are orga
tently, expressing the imperatives of
dimensions of the paradigm. Each chapte
tions· The World Context, Theory,
Conclusions.

The World Context The purpose of
section is to provide descriptive data, a
diachronically and synchronically. Thus th
two parts: (a) Origins and Development t
and (b) Contemporary Examples. This
chapter represents the comparative them

Theory This section is also divided int
(a) Systems and (b) Processes. Here we
holistic theme and the systems and proce
sion of the paradigm. You will learn abou
retical tools anthropologists use to a
materials introduced in the first section.
logical, environmental, cultural, and soci
pertinent to the understanding of the ma
sented in the chapter are introduced, and th
that characterize the operation of those s
explained.

Analysis This section covers the fourt
of the paradigm in two parts: (a) The Folk P
and (b) The Analytical Perspective. Here you
how anthropologists try to make sense out
phenomena—from the subjects' point of v
perspective) and from the anthropologist's (a
perspective.

Conclusions The purposes of this sectic
summarize the chapter and to expose you to th
debates about the materials of each chapter
accomplished in two parts: (a) Schools of Thou
(b) Author's Conclusions (these are the view
author of each chapter, not the authors of the
As you will learn, anthropologists are far from ac
universal agreement on many important issues

pologist Napoleon Chagnon
d in the traditional feast finery of
nomamo, an Amazon Indian group
ear the boundary between
ela and Brazil, Chagnon is
ited by a most difficult problem
cipant observation research how
ne participate in the activities of a
whose culture one barely com-
ds while maintaining a credible
ole in that context and also
ing one's personal sense of self



The Case Study

Chapters 20–25 are each chapter-length case studies. This entire section of the book represents the fifth theme of the paradigm, *the case study approach* to social research. Consistent with our belief that people learn better when materials are presented within a predictable structure, the case studies also follow a consistent organization:

1. *Introduction* The flavor of the group and area being studied.
2. *The environment* The important ecological features of the environment, with an emphasis on making the group's subsistence activities readily understandable.
3. *The group* A detailed description of the people under consideration. Sufficient information is provided for you to apply many of the concepts you learned in earlier chapters to the case material. Each account of a group discusses: (a) subsistence activities, (b) social organization, and (c) culture.
4. *Problems and prospects* A survey of the important political, ecological, health, economic, or demographic problems facing the group; the community in relationship to the wider historical processes changing the face of the world. The relationship between these problems and the industrial world is often emphasized so that you can discover connections between ourself and the community under consideration.

The book is organized to make anthropology easy and pleasant to learn. We hope that after reading this book you will want to learn more about that inherently interesting subject, the human species.

Summary

Anthropology is the systematic investigation of the ...ture of human beings.

The historical roots of anthropology can be traced ...k to the ancient world, when travelers noted and ...culated about human cultural and physical differ...es. Religious beliefs inhibited rational discussion ...uman origins and human nature in medieval times, ...during the Renaissance and the Enlightenment ...lars devoted increasing attention to these con...cerns. The colonial period brought ... contact with "primitive" peoples and ... interest in other cultures. By the nin... thinkers were attempting to formul... and principles underlying human soci... tion. Modern anthropology has becom... complex academic discipline.

Today anthropology is divided into ... fields: (1) *physical anthropology*, wi... human and other primate biology; (... the study of the physical remains (bo... cultural) left by human beings; (3) *lingu*... of language; and (4) *cultural anthrop*... concerned with the social organizatio... systems of human groups.

A science is, among other things, an o... system, including rigorous standards ... findings. A science has a paradigm, or ... and practices specific to the discipline. ...digm includes basic theories, laws, ge... modes of research and evaluation, and ... for measuring and observing. Scientific p... place through the accumulation of kn... tained under a paradigm and through ... replacement of one paradigm by another.

The anthropological paradigm consists ... themes.

The *comparative theme* is the system... ...son of evidence from various cultures ov... time.

The *holistic theme* is the consideration ... range of factors in the attempt to gain a ... planation of human behavior.

The *systems and processes theme* is the ... explain social phenomena dynamically in ... processes of interaction between the vario... that contribute to human behavior.

The *folk perspective-analytical perspecti*... omy is the distinction between the viewpo... people observed and the "scientific" viewpo... observer.

The *emphasis on case studies* is the cruci... pological method of participant observation.

This textbook is organized to systematica... the basic structure of the anthropological ...

Annotated Bibliogr

Brew, J. O., ed. (1968) *One Hundred Yea* Cambridge, Mass. Harvard Univ. Pres but useful collection of essays coverir years in the history of anthropology, t the perspectives of some major Americ own subdisciplines. Gordon R. Willey or ology, Glyn Daniel on Old World pre Washburn on biological anthropology ethnology and social anthropology, anc bury on anthropological linguistics.

Malefijt, Annemarie de Waal (1974) *Image* York. Knopf. A readable, useful history ment of anthropology as an academic with philosophers and travelers in ancient ceeds through the most contemporary c cognitive anthropology.

Voget, Fred W. (1975) *A History of Ethnolo* Holt. Although somewhat idiosyncratically survey of the history of ethnology is comp useful.

Human Biolo and Cu tura Evolution



The Concept of Evolution

History

As far as we know, all societies have their own origins and often about the entire human species as well. The ancien a number of origin myths, including the ta theus, who created people out of earth The philosopher Thales (640?–546 B.C.) from mythological stories and claimed tha in the world had its ultimate origin in on —water. This perspective, if not the spe itself, was significant because it tied the or material world to a material rather than n base (Malefijt 1974:3).

Writing in the following century, the Gr opher Empedocles (495?–435? B.C.) even sug idea of natural selection, which would b cornerstone of Darwin's theory of evolu 2,300 years later. Empedocles believed that body parts originally existed in isolation other and combined randomly, often for tesque combinations, such as the Minotaur logical creature with the body of a huma head of a bull. However, only those com



no 1, still living in
e. This was an
in the cave under a
/ears ago. He had
; only one arm) and
oked after by his
ne. He is one of
nd in Shanidar
gros Mountains of
Ralph Solecki of

of body parts that
and reproduce th
human species w
process.

Some ancient G
the evolution of h
475? B.C.) rejected
origins of human s
Western scholar to e
entity created solely
as humans accumula

But the speculatio
did not lead to syster
human biological an
of Christianity, with i
representation of G
motivation for such
thought that their maj
describe the natural la
providing people with
some ingenuity and pe
(which would imply d

was not compatible with this world v
the universe was an expression of the
be perfect. To believe it had chang
meant that it had either been created
had become imperfect. This idea would
to the conclusion that God, having cr
things, must therefore Himself be im
logical impossibility. Thus theories
origins were confined to an acceptanc
story of Adam and Eve (Clark 1957:26).

of life which did not
es of natural selection
Empedocles (c 495-

During the Renaissance in fifteenth
scholars devoted considerable attent
Greece and Rome as the origins of m
civilization. Nonetheless, a literal inter
Bible continued to inhibit historical i
hundreds of years. As late as the first
teenth century, most scholars uncritica
calculations of Archbishop James U
Lightfoot (vice-chancellor of the Un
bridge), who in the early 1600s had
careful study of Genesis that the earth
at 9 o'clock in the morning on Octo
(Daniel 1963:24-25).





However, scientific discoveries, esp
and biology, gradually forced scholars
traditional points of view. As more
earth's geological strata were discove
realized that the thickness of some
nature of certain minerals in them)
long developmental process, late eig
nineteenth century natural scientists
push back the date of Creation. In
silized record of extinct forms of
obliging scientists to produce plausibl
the existence and subsequent disap
creatures as the woolly mammoth
toothed tiger.



A CENTAUR.

In 1833 Sir Charles Lyell published
volume of *Principles of Geology*, a
dously influenced Charles Darwin as
theory of evolution (Daniel 1963:4
such schools of thought as *diluvialism*
claimed that Noah's Flood accoun
known of the earth's history, and *cat*
adherents proposed a series of na

nristian doctrine that creation had
single event became more and
roublesome in the course of the
enturv With Vasco Nuñez de
's discovery in 1513 that America
ot an extension of Asia but rather
rate continent, the origin of the
ns ' became a source of heated
The *Monogenists* defended the
ie of a single origin for all humans,
proposed that the "Indians" had
rom Atlantis (a mythical con-
which was believed to have
ed from Spain to Africa before it
others that they were one of the
bes of Israel The *Polygenists*
for more than one creation—but
ted to reconcile their views with
riptures by claiming that although
ad created all people, all people
iot necessarily descendants of

Polygenist position is represented
temporary anthropology by
on S Coon, who argues in his
versial book *The Origin of Races*
that the human species evolved
parate times—each time producing
the five races which he believes
ue to exist Most anthropologists
e that this argument is wrong, that
olution of the modern human
s is the result of a widespread
s in which all populations
pated to an equivalent degree





(1797–1875). Even great
imited by the paradigms of
ll's insistence that uniform
processes were responsible
on of the different strata
ute the earth's crust cut
of the *ad hoc* theories
ed the appearance of every
ed stratum to a unique act
ver, he was unable to
ion of a gradually develop-
the inanimate to the
nimate—where the logical
ve been a theory of
a challenge to orthodox
ne. However, he took a
the researches of Charles
ively encouraged him

...t continuous and uniform in natu
this *uniformitarian* position, however,
to free himself entirely from the doc
framework, he continued to believe in
tion of unchanging species and acc
species' disappearance in terms of
catastrophes (Mayr 1972:985).

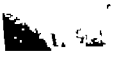
Some biologists did comprehend the
comparative anatomy and the fossil
stance, the French biologist the Cheval
(1744–1829) advanced his "development
in which he arranged all known animals i
based on their increasing organic c
clearly implied that human beings we
product of a process of organic transf
had been created through the same p
had created all other creatures. Howev
imagination was also bound by theologic
and he did not carry his research to its lo
sion. Rather than rely solely on material fo
organic transformation, he discerned a
divinely ordained pattern.

Before researchers could appreciate fu
uity of the earth and the processes that ge
species, including human beings, they ha
their perspectives, their belief systems (se
Scholars had to look at the evidence before
entirely different way and with quite diffe
mind. They had, in other words, to change th
by which they were trying to make sense o
(see Chap. 1). In effect, a scientific revo
needed.

If the revolution was to overcome the
inertia of Christian dogma, it would have
convincing. It would have to be based on
simple, universally applicable principle. Alf
Wallace arrived at this principle more or l
same time as Charles Darwin, who provided t
theoretical framework of evolution in *On the*
Species in 1859, and his views on human evo
The Descent of Man twelve years later. Wa
Darwin had hit on the same basic mechanis
count for both the creation and extinction
forms: *natural selection*.

arwin (1809–1882) Darwin and
ssel Wallace developed the
evolution independently and
ie time They built upon
concept of transformism and
egarding the selective process
ggle for existence but rejected
that traits acquired by
s in their lifetimes could be
to the next generation In 1858
id Wallace presented a joint
their theory of evolution to the
Society However, it was the
n of Darwin's *On the Origin of*
Means of Natural Selection, or
vation of Favored Races in the
or Life in 1859 which made the
ilable to a wide reading public
ed the course of European
history









General Principles

Before we begin a detailed discuss
ticular elements of evolutionary theory
some general principles underlying t
evolution. At its most elementary leve
ways involves change. But although a
change, all change is not necessarily e
we must answer a basic question: Wha
about evolutionary change? Whether
about forms of human society or form
organisms, the answer is the same. Evolut
is the transgenerational change that occu
or biological forms adapt to their envi
cause aspects of environments—both
social—are always changing, it follows tha
a never-ending process in both the biologi
worlds.

Adaptational change can take two fo
different paths. On the one hand, a social
form can achieve a state of complexity a
tion that adapts it exquisitely for a particu
ment or even for a range of environments
happens, there is no longer any pressure
ticular form to evolve further. An example
of adaptation is the so-called horseshoe cra
the horseshoe crab has existed for some
years without any significant structura
(Simpson 1949:101), it is still quite well ada
environment it inhabits. This kind of specia
tation is called *involution* or *specific* evolu

On the other hand, a social or biologica
respond to the demands of the environme
coming more adaptable and flexible. In order
this, the form must develop to a qualitat
stage of structural complexity, a new stage of
tion that makes it more versatile in coping w
lems of survival posed by the environment.
of adaptation is called *general evolution*
tionary progress.

An important difference between the two
modes is that involution involves specializ
tation to a particular environment and hence is
relative, whereas evolutionary progress, involu
does the emergence of higher forms that are in



) (1822–1884). While raising
rden of the Moravian
which he lived as a monk,
mented with their breeding
tly controlled conditions
him to discover two
of genetics. (1) *The Law of*
etically inherited features
separate, discrete units,
id together. These
ting units of inheritance
es. (2) *The Law of*
ortment genetic traits
pendently, chance and
ermines which combina-
be transmitted from
g

more complex and more adaptable t
is *intrinsically directional*. In our di
biological and cultural evolution, we
involution and evolutionary progre
roles. (Service, 1971)

The Dynamics of Evolutio

Biological Evolution

Charles Darwin's theory of evolu
process in which those organisms or s
isms that had the ability to survive an
given environment did so at the expen
lacked the ability. The qualities that
forms to survive and procreate would
generations, become outstanding chara
entire group. Darwin termed this p
selection.

> The result of Darwin's inquiry was a
> the principle of natural causatic
> disclosed the presence of continuity
> where hitherto men had believed in su
> interventions and interruptions, or
> most, had appealed to an inner impuls
> development, which might be suppose
> from one stage to another (Höffding

But although Darwin explained the proce
tion, he was not able to describe the biolo
anisms on which natural selection was ba

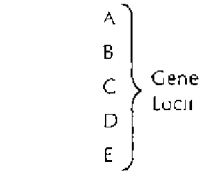
An Austrian monk and amateur biolo
Gregor Johann Mendel (1822–1884), by exp
with the breeding of peas, discovered and
the principles of genetic inheritance that e
natural selection takes place. Since Mend
scientists have explored the biological
that underlie these genetic mechanisms,
genetic basis of inheritance and evolution is
understood.

Human beings, like all other organisms,
posed of cells. We may think of the cells as
building blocks of the body. Each cell consists
nucleus, in which we find (among other thing
tially all the genetic materials contained in
(2) the *cytoplasm*, which consists primarily of a
mass surrounding the nucleus, and (3) a *membr*
wall that encloses the entire cell.

The human body co
of cells: (1) the *somati*
body parts and which a
replaced, and (2) the g
sperm in males and egg
a new human being as

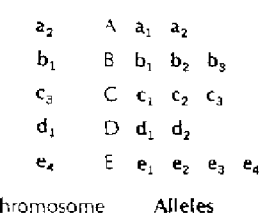
When discussing ge
ested in the nucleus o

-1
somes, Genes, Alleles



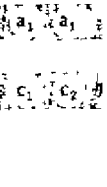
hromosome

Chromosomes are strings
gene--A, B, C, D, E--has it
position (locus) on a partic
some



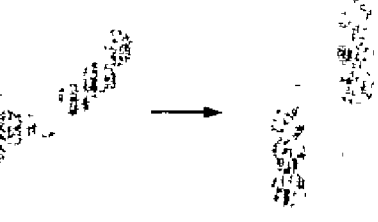
hromosome **Alleles**

Each gene may have sever
example, gene A may have
a_1 and a_2. These versions
called *alleles*. Thus a chro
consists of a random selec
of its genes' alleles



Chromosome
air

In somatic cells chromoso
pairs. Ideally, the pairs lin
each other gene by gene
happens they are said to
Thus every gene appears
it more accurately, each g
sented by two alleles. If t
are the same (as for gene
genotype is *homozygous*
the two alleles are differe
C), we say the genotype
for that gene.



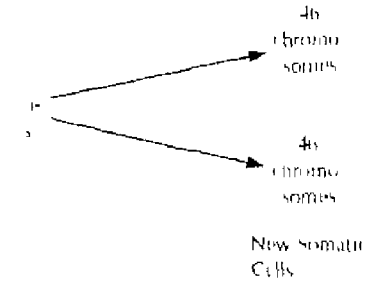
wisted
hromosome
air

Chromosome Pair
with Crossed Over
Genetic Materials

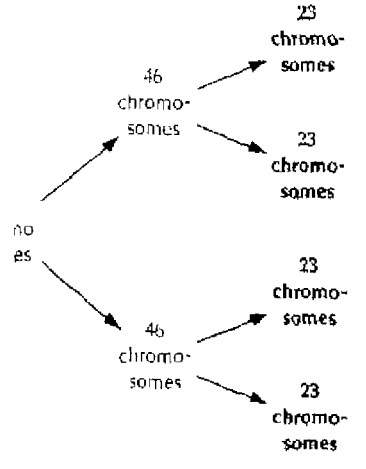
Chromosomes often twist
other. When this happens
times "trade" genetic mat
called *crossing over*. The
two genes are on a chro
more likely they are to b
due to crossing over.

Crossing over helps to
genes are passed on to th
tion randomly.

2-2
vision: Mitosis and Meiosis



s One cell with the diploid num-
chromosomes (46 for humans)
ates its chromosomes and then
s—producing *two copies*, each with
ll diploid number of chromosomes



osis In the production of sex cells
metes), one cell with the diploid num-
of chromosomes duplicates its chro-
omes and then divides—producing
copies, each with the *full diploid*
iber of chromosomes Both of these
cells then divide *without* first dupli-
ng their chromosomes—producing
copies, each with the *haploid* num-
of chromosomes (23 for humans)

are the *genes*, which are physical struct
mine the potential for one or more
behavioral characteristics of the organ
inherited as units; they do not blend w
Genes are located along stringlike mo
complicated proteins known as *chr*
somatic cells, chromosomes are norm
pairs, each pair consisting of two chr
contain the same genes. The major ex
arrangement is the pair of chromosom
mines sex. In females sex is determine
alent pair (called X chromosomes), bu
different kinds of chromosomes are
male" X chromosome and a "male"

Human beings normally have forty-s
in each somatic cell nucleus (that
pairs). This number, called the *diploid*
from species to species. Gamete cell
hand, have single rather than paired
thus human gametes have twenty-thre
This number is called the *haploid nur*
varies from species to species.

All the different versions of any
alleles of that gene. For instance, the
determines the ABO blood type of e
gene has three versions, or alleles: A,

Each person inherits half of his or
each parent because the gametes of
half the genetic material carried in
Thus two gametes (one from each
and produce a new human being, each
with it the haploid number of genes
two haploid numbers results in the
the number of chromosomes necessar
to develop. With the exception of id
genetic component of each person i
we receive from each parent a rando
alleles the parent carries.

The genetic component that eac
is called the *genotype* of the pers
observable and measurable charact
the *phenotype* Some aspects of the p
blood type or eye color, are complet
the genotype. Other aspects of the
from the interaction of genotype-c

Figure 2-3
Mendelian Inheritance

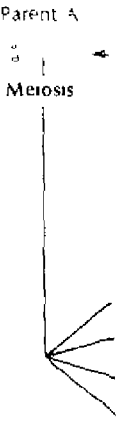
This figure shows the possible combinations of alleles in the children of parents who are both heterozygous for a given gene. Two alleles are shown. The combinations and the frequencies of their occurrences are

4 homozygotes
8 heterozygotes
4 homozygotes

Dividing by 4 to find the lowest common denominator, we find that the ratio of homozygotes to heterozygotes is

1 2 1

his means that, according to probability, one-fourth of the children will be homozygous for
ne-fourth will be homozygous for
nd half will be heterozygous



potentia
what det
program
Howeve
environn
mother
fluence

The g
place is
changed,
populati
males an
equally li
of differe
tion to g
This prir
the exte
the geno
over the
genetic
change o
populati
the Hard
allele an
evolution

Pune Social Science Institute
LIBRARY
Acc No 3092
Class No
Book No
Allahabad

, Recessiveness, and ce among Alleles as the ABO Blood System

allele masks out the expres- cessive homologous allele in 'pe of an organism. A **reces-** prevented from affecting the of an organism by a homolo- ant allele. Thus recessive affect the phenotype of an ly if the genotype of that homozygous for that reces- *Codominant* alleles express equally in (affect equally) the of an organism when they are

Relationship Between Alleles
A is dominant over O. O is recessive to A.
B is dominant over O. O is recessive to B.
A and B are codominant.
O alleles are recessive to the other alleles of the ABO gene. The only way they can be expressed in the phenotype is if the genotype is homozygous for O.

What causes this never-ending evolu Four mechanisms either singly or constantly affect these genetic freque random drift, gene flow, and natural s

Mutation. The delicate molecul genes is continuously being affected by radiation (ranging from cosmic radiat chemicals taken into the body, and mechanical breakdowns. When the effe nent and result in changes in the inherit potentials of genes, we say that a muta place. We discover a mutant gene whe change in a phenotypic trait (in a popul know is genetically determined. As far mutations occur randomly. This means t do not happen because it would be c adaptively useful for a population to a trait in order to adapt to environmental very difficult to know the frequencies o tions among human breeding populations usually only detect harmful mutations, means of knowing whether the frequencie and useful changes are similar. Present range from 4×10^{-6} to 1×10^{-4} mutatio per generation (Buettner-Janusch 1973:352 the actual rates, *mutation is the only sourc new genes and alleles.*

Random Drift. A very large breeding is necessary for the Hardy-Weinberg law When a small breeding population splits larger one and becomes isolated as a resu graphical or cultural barriers, there is a go that it is an unrepresentative sample of original gene pool and that, over the gene will pass on increasingly differing perce alleles. This random drift will eventually r breeding population with genetic character are quite different from the population from split—especially since mutation and the other genetic evolution continue to operate populations.

Gene Flow. When two breeding populat have been relatively isolated from each other—have different gene and allele frequencies—interbreed, the genetic components of both

.. dents of Pitcairn Island go out in
ıall boat to meet Admiral Richard E
ıe entire population of Pitcairn
, descended from 12 British sailors
ıtinied on the HMS Bounty, sailed
ı, married Polynesian women,
with their wives to find an
ed island where they could hide
e wrath of the British Navy. Their
g are different genetically, from
f the breeding populations (European
ynesian) of these original settlers.
ı mechanisms which are most
ly at work in the history of Pitcairn
population are *gene flow* and genetic
n you explain why this is so?

tions are
populatio
change s
viously isc
each popı
hybridizat
eventually
or they ma
to remain
side effect
which has
groups, is g
the parent
hybrid vigo



...echanism of evolution is
rtant and most misunderstood Darwin
s by which new species are created and
out as the result of an unending struggle
n which the environment favors certain
dividuals. The members of the group
· adapted to the environment are more
ve and reproduce. Thus these favored
are more likely to be passed on from
generation and to eventually become
atures of a new form of organism.
led Darwin was how to account for the
he new qualities in individual organisms
ter adapt them to the environment and
he basis for natural selection. On No-
59, shortly after the appearance of his
of Species, he acknowledged in a letter
homas Huxley (also an eminent biol-
ve cleverly hit on one point which has
d me; if, as I must think, external con-
e little direct effect, what the devil
ch particular variation?" (quoted in
45; emphasis in source).
w that the source of these variations is
for some breeding populations, gene
ther group. These variations are not
to make a given individual or group of
ior or better adapted. Natural selection
herent superiority of one individual or
ense of another. It simply means that,
environmental conditions prevail,
lly acquired genes that produce varia-
notype of individuals of a particular
ose individuals a better chance to sur-
ce than members of another group—
heir own group who do not have
should the environmental circum-
hat is adaptive and thus selected for
it well be maladaptive and selected

tation, random drift, gene flow, and
are the genetic mechanisms that
gical evolution. Whereas the first
affect the frequencies of genetic
itions in the statistical sense, only
natural selection gives a den ra
these f quency changes The d ec o
determine l by myst cal orces such
Pather t s charted by the selective
environment.

Cultural Evolution

Before we can begin to talk about
tion, we must define the term *cultur*
most important concept in anthropo
scholars differ on its exact definition, m
gists would agree in general with the fol
consists of the patterned behavior (bo
physical) that individuals learn and are t
bers of groups. It therefore include
activities, technology, beliefs, knowl
standards, customs, traditions, language
learned patterns of behavior that are p
generation to generation among group n
human group, then, has its own unique

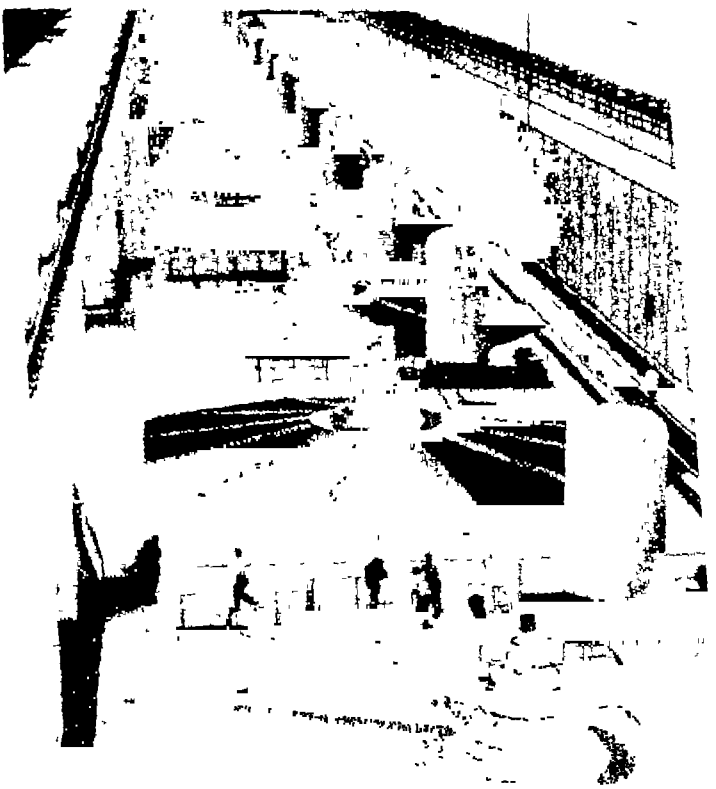
The history of human biological evo
separable from the history of human cultu
As the human line began to separate and
itself from the evolutionary lines of our
tives, cultural and biological developmen
continue to be) in a state of dynamic
stimulating each other and making furth
ment possible. However, just as we can
mechanisms of biological evolution witho
to culture, we can also discuss the mech
processes of cultural evolution separate fr
Although culture "has its origin and basis
logical makeup of man, in its relation to hu
after it has come into existence and become
as a tradition, culture exists and behaves
to man as if it were nonbiological in charact
1959:12; emphasis in original).

Although we can measure biological evo
monitoring gene frequencies and calibratin
typic features such as body shape or brain s
much more complicated task to measure cultu
tion. A frequently used though narrow meas
is technology. Leslie White argues that "cu
vances as the amount of energy harnessed p

per year increases, the means of contr
(1959:56). We can encompass more o
For our purposes w
Norman Berkowitz t
is plainly reflected i
man brings to bear
activities" (1972:238;

Two fundamental
fusion—enable cultu
the activities in whic

i our society to harness
unts of energy is used by
t our great evolutionary
wever, if other measures
amount of leisure time
he average person or the
ıich all people are able to
wants) are used the hunters
s of 15,000 B C were
ter off than we are now.



behavior or the invention
relationship between an
in adaptive behavior or te
For example, the discover
atoms did not lead direct
energy. Other inventions
were necessary before th

Diffusion. A fundam
communication, both w
groups (see Chap. 7). W
learn new items of kno
solutions to problems, c



new tools, or they acquire any other
element of culture from another grou
these elements have diffused from one
other. Diffusion can take place directly
tact between both groups. An example
would be the Native Americans teachi
how to plant corn. Or diffusion can
directly, through intermediary groups.
called *stimulus diffusion*, involves the spr
traits beyond the groups with which t
culture had direct contact. For example,
of cultivators called the Danubians move
Europe some 7,500 years ago, they broug
the knowledge of how to plant grains an
animals. Local groups picked up these tec
the Danubians and passed them on to
Thus the domestication of plants and an
much farther in Europe than the Danubian
migrated.

invented independently
nes and in three different
orld From these centers—
t, East Asia, and
diffused outward See

All known societies increase their abili
through both invention and diffusion. So
their environments by becoming more an
cialized and efficient in exploiting the r
their environments. As noted earlier, we
volution or specific evolution. Other societ
their ability to make use of their enviro
becoming more complex and adaptable, m
deal productively with a greater range of en
This, as we have defined it, is general ev
evolutionary progress.

Summary Evolution, or the process of
to environments, operates in both the biol
cultural realms. On the biological or organi
mechanisms by which evolution occurs are
random drift, gene flow, and natural selecti
cultural level the mechanisms are invention
sion. On both levels these mechanisms can
two very different evolutionary processes—i
and evolutionary progress. We can see the
anisms and processes at work in human biolo
cultural evolution.

It is important, however, to note a crucial d
between biological and cultural evolution.
the former is always in response to enviro
pressures and lacks any *intent*, the latter freq

though not always—results from d
varying from trial-and-error experim
research on the part of individuals
cultural evolution can be and freque
sought and planned for. Of course, a
their knowledge about genetics, it n
that societies will plan to control bio
as well—a development of both gr
terrifying possibilities.

The Remains of Our Ance

The First Hominids

Human beings belong to a grou
known as the order of *primates*. This
into two suborders: *Prosimii*, which in
lorises, tarsiers, and similar creatures; a
dea, which includes monkeys, apes, and

re 2-5
nomy of the Order of Primates
taxonomy, increasingly differentiated
e approach humans, shows phylo-
tic (evolutionary) relationships as
as how categories are included in
other. Thus, for example, the *great*
(chimpanzee, gorilla, orangutan) are
losest living relatives, with the lesser
gibbon, siamang) next. Humans and
Hominoidea) are more closely re-
to Old World monkeys (Cercopithe-
) than to New World monkeys,
belong to a different *infraorder*,
tyrrhini.

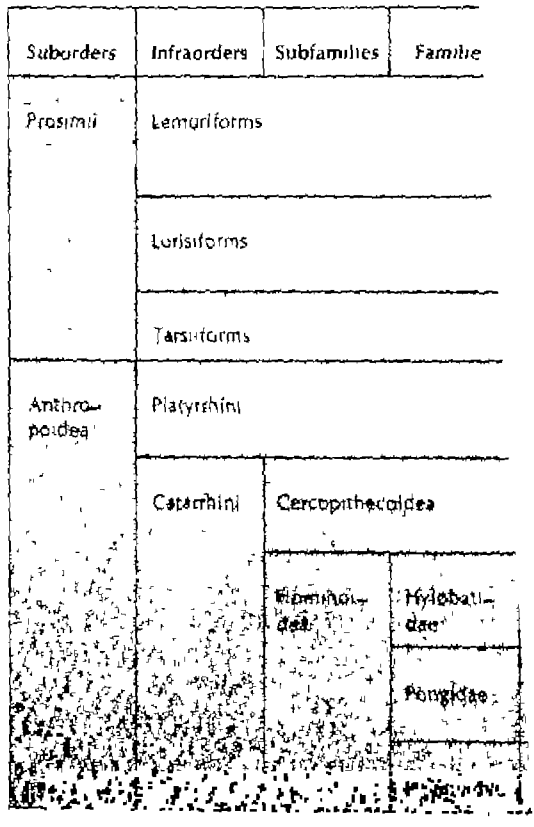


Figure 2-6
The Cenozoic Era
The Cenozoic era follows the Cretaceous era and is divided into the six epochs shown. Although the earliest primates actually evolved late in the Cretaceous, the first apes evolved in the Oligocene and the first hominids, late in the Miocene

Pleistocene epoch:	Ice Age, appearance of *erectus, sapiens*
Pliocene epoch	Australopithecines appeared toward end of this epoch
Miocene epoch.	Rapid evolution of grazing mammals; apes differentiated, *Ramapithecus* appears
Oligocene epoch	More progressive mammals became dominant, monkeys differentiated *Aegyptopithecus* appears
cene epoch:	More advanced Prosimii such as Lemuriforms and Tarsiiforms began to develop
ocene epoch.	Characterized by small, archaic mammals including the earliest Prosimii

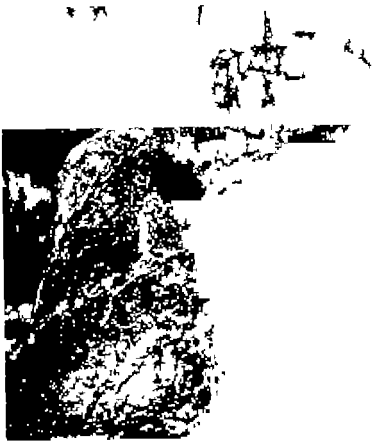
The suborder *Anthropoidea* is further
infraorders: *Platyrrhini*, the New World
as the spider monkey); and *Catarrhini*,
monkeys, apes, and humans.

Catarrhini are divided into two
Cercopithecoidea, the Old World monk
noidea, apes and human beings. There
ilies of *Hominoidea: Hylobatidae*, whic
lesser apes—the gibbon and siamang;
great apes—the gorilla, chimpanzee, a
and *Hominidae*, which refers to human

To discuss human (hominid) evolutio
late about how and when the developn
of our own evolutionary line broke av
lines of development of our nearest relati
apes (pongids). The search for our own
us, then, to look for an ancestor comr
pongids and hominids, to identify the f
hominid ancestors, and to explain how t
split off from the pongid line. The most c
of information on this subject is the fos
preserved pongid and hominid skeletal ren
we can compare in terms of their morphol
age, and the environmental contexts in
are found.

Morphologically, the common ancestor
human beings would have to be a conn
between the primitive primates of the Pale
Eocene epochs (see fig. 2-6) and the Mic
of East Africa. The group of fossils that fits
this role is called *Aegyptopithecus*, an Oligo
gid some 30 million years old. By the shape
it could certainly have been ancestral to *Dry*
which appeared some 10 million years later
ancestor of the modern great apes. But d
relatively long snout and small braincase,
pithecus exhibits characteristics (such as
sockets that are directed fully forward) th
easily make it ancestral to *Ramapithecus*,
hominid.

Aegyptopithecus was found in the Fayun
Egypt, which during the Oligocene was a
forested environment. From what we can disco
its remains, it seems to have been an agile, quac
forest canopy dweller approximately the size o



ern gibbon, whose dentition (teeth fc
that it was probably adapted to an
possibly a frugivorous (fruit) diet (Pil
Simons 1972:216–221; Williams 1973:

In 1937 G. Edward Lewis compl
dissertation at Yale University. In
work he described the remains of s
that he had found in the Siwalik l
called this primate *Ramapithecus*
claimed that it was ancestral to *Aus*
hence also to modern human bein
His dissertation was ignored for twer
Elwyn Simons of Yale restudied t
decided that Lewis had been correct
tions (Pilbeam 1972:91–92).

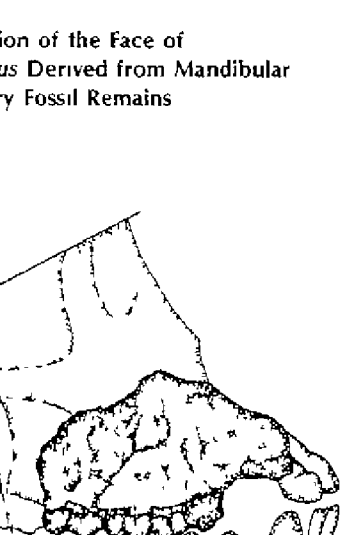
Renewed interest was focused o
mains, and additional discoveries
including some jaws found by Loui
Kenya (which he called *Kenyapithe*
though we have only the upper and
primate, very careful study of the t
physical anthropologists to constru

late Miocene hominid with a cranial
300 cubic centimeters (cc), living som
years ago in open woodland areas fro
pithecus wickeri) to India (*Ramapithe*
This primate is now referred to as *R*

> Taken as a whole, the evidence t
> from the *Ramapithecus* material
> animal with a facial-dental comple
> istics similar to or foreshadowing
> hominids, both morphologically an
> The relative proportions of front a
> as well as many other features,
> [*Ramapithecus*] was, or was becon
> feeder eating a diet including nu
> tough morsels (Pilbeam 1972:94).

> The resemblances to *Australopith*
> the whole face and dentition of
> Together these features combin
> increased power of the grinding
> and a decrease in the size of th
> presumably as a result of a de-en
> juicing and shredding function c
> cisors and large interlocking cani
> apes (Simons 1972:271).

ion of the Face of
us Derived from Mandibular
ry Fossil Remains



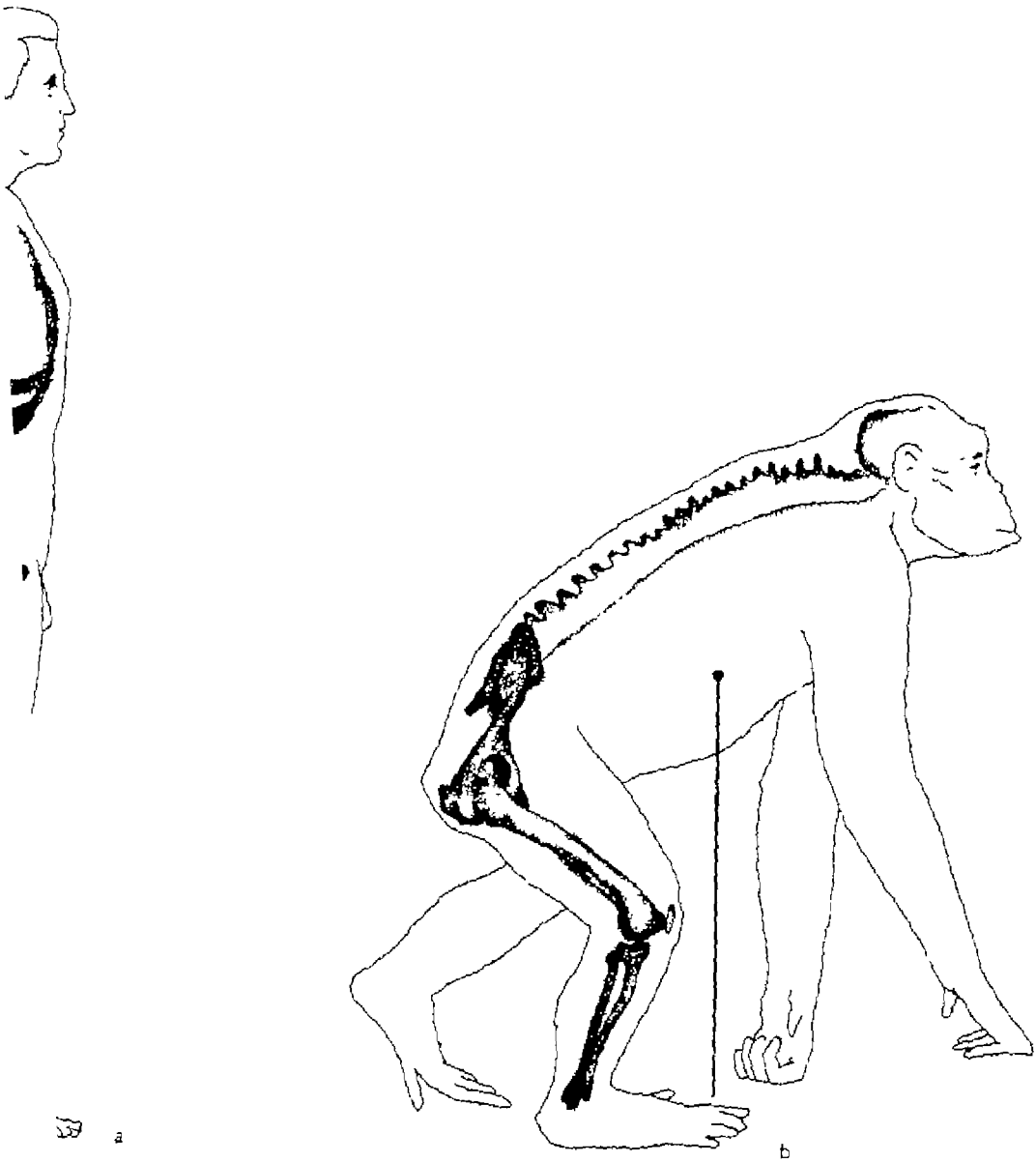
Very sophisticated research by
(1969) on the effect of forms of loc
shape has been applied to what w
pithecus. These researches suggest
that this hominid was quite possibly
ing between 40 and 80 pounds, tha
arms, and that it lived predominantly
to the ground for food (1972:97–98)
pithecus might well have been a n
terrestrial knuckle walker (like the
rather than primarily a tree dweller,
moved bipedally (on two legs) whe
into open foraging areas. Over sev
the hominid line of primates grad
bipedal locomotion through natur
hominids became habitual ground-d

If we accept *Ramapithecus* as th
hominid, this means that our ances
from the ancestors of apes at the edg

. vegetab foods off
e fact that *Ramap thecus* a M ocene
that the tradit onal assumption that the
ppeared in the Pl ocene in the savannah
fr a s wrong And s nce we have found
iated with *Ramapithecus*, theories that
ıtiation of hominids to the use of tools

(Wash burn 1960) a s ap ear o be p c c n
However *Ra n p the* r ght l av made and
occas o n tools as moderr h mo nz es do
left no trace of the n

A persuasive reason for accepting *Ramapith*
as our first hominid ancestor is the fact that the hu
shoulder still reflects our ancestors' arm-swinging



n

life. *Ramapithecus* probably had the mo
such a creature, yet it was clearly movin
forests and toward a ground-dwelling w
Ramapithecus as our ancestor, it is ea
the adaptive steps that led to the fully bi
pithecus, who had lost the tree-dwelling,
mode of locomotion and was living
savannah grasslands of Africa some 3.5
ago.

For many years the nature of the aus
fossil remains has puzzled physical an
and opinions still differ over how these fi
interpreted. We shall present one widel
pretation, but indicate some areas whe
serious disagreements.

In 1924 in a limestone quarry at Tau
Africa, workers discovered the fossilized
some skulls. The limestone blocks cont
skulls were sent to Raymond Dart at W
University, who found that two of the sk
baboons, but that fragments of a braincase
a third skull were clearly hominid rather
in nature. Although the skull belonged to a
child, enough of its features were present
conclude that this child represented a po
"ape-people"—that is, a population that ha
istics of both pongids and hominids bu
relatively clearly in the hominid line. Dart
species *Australopithecus africanus* (Leakey a
1969:112).

Since that time a number of similar rer
been found (many by the famous team of
Mary Leakey in East Africa), suggesting the
picture. Apparently two distinct lines of *Aust
cus* developed, called *robust* and *gracile* (see
Robust australopithecine adults averaged
5 feet in height and weighed between 120
pounds. They had the limbs of fully erect bi
were thus well adapted to the savannah
environment (although their lower back ar
structure was not fully evolved for erect
Their cranial capacity was approximately 500
had massive brow ridges, no forehead, and
crest (the sagittal crest) running down the midd
top of the head that served as a platform for th

gure 2-8
pedalism Versus Knuckle Walking: Human Evolutionary Development

Humans maintain a bipedal posture, in which the body's center of gravity is located directly behind the midpoint of the hip joint. When erect, both hip and knee are extended, thus conserving energy.
In knuckle-walking chimpanzees, the center of gravity of the body is located in the middle of the area bounded by the legs and arms. When a knuckle-walking ape walks bipedally, its center of gravity shifts constantly, from side to side and up and down. In humans, there is much less displacement of the center of gravity, and thus bipedal walking is much more efficient.

ment of the muscles that worked a qu
Their teeth were fully hominid, with
incisors and canines; their premola
however, were quite large.

Two species of robust australopithe
existed. *Australopithecus robustus* app
million years ago, surviving until ap
million years ago. At this time the ve
called *Australopithecus boisei* appe
1972:156), differentiated from *Australop*
tus by a less striking difference in size
front and back teeth.

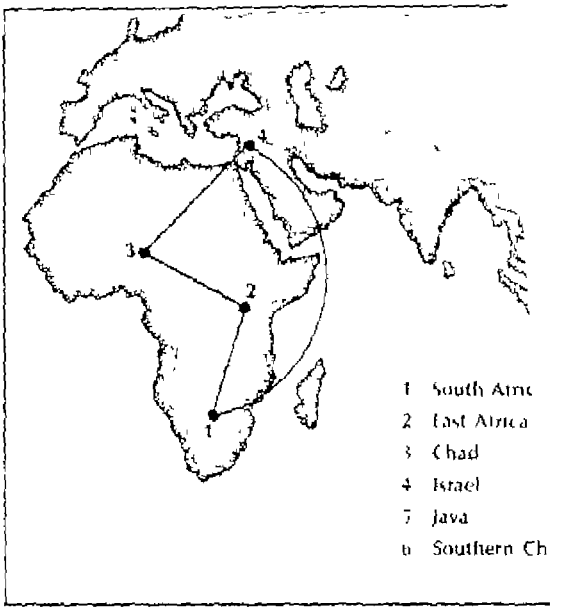
Gracile australopithecines were ap
feet tall and may have weighed as litt
pounds or as much as 100 to 120 pour
adults. Like the robust australopithecin
fully bipedal (although not entirely erect
open savannah country. They also had larg
and lacked a forehead. However, their he
was much less rugged than that of their rot
and they mostly lacked the sagittal crest
of the skull. Their dentition, like that o



ajor australo-
ote the heavier







line, was fully hominid in that their canine small—as were their incisors, premolars, and

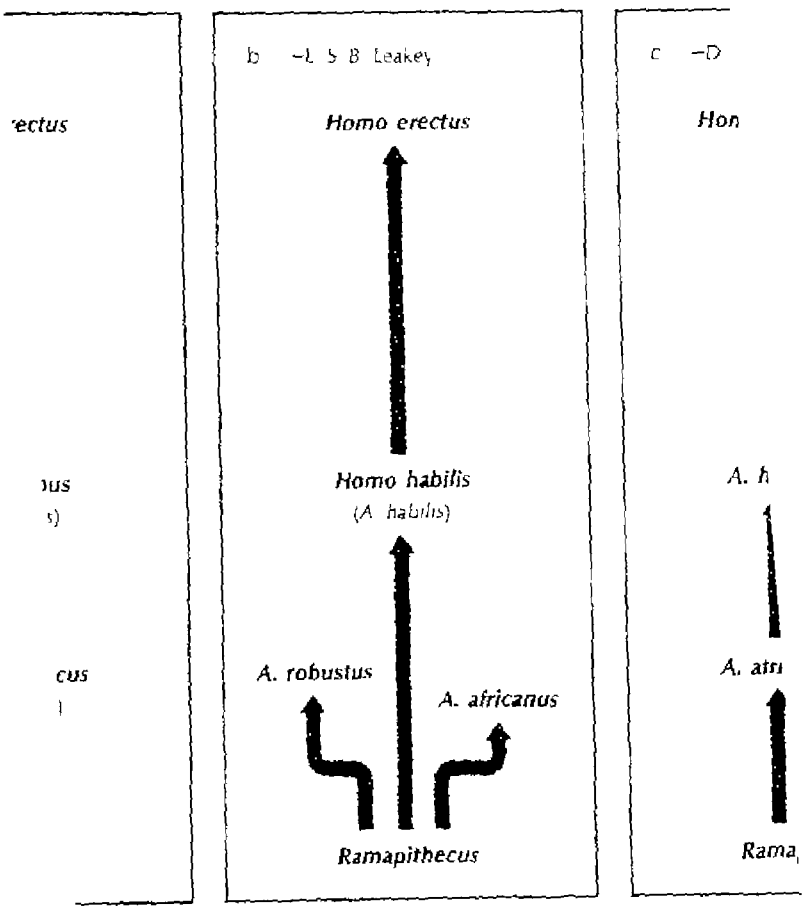
After much debate, many anthropologist agree that the gracile line of australopithecines represented by two species. *Australopithecus af* had a cranial capacity roughly the same as the australopithecines (about 500 cc). Remains have discovered in both East and South Africa. The d the South African finds are not established, but Africa, *Australopithecus africanus* has been between 3.5 million years ago and 1.6 million yea —making it roughly contemporaneous with *Aus pithecus robustus*. Between 1.85 and 1.65 million ago, *Australopithecus africanus* apparently evolve a somewhat larger and more advanced form, w cranial capacity around 600 cc. For a while its fi (Louis and Mary Leakey) called it *Homo habilis*, most experts agree that it was a form of gracile Au lopithecus and it is now generally referred t *Australopithecus habilis* (Butzer 1971:413-421).

It is possible that by 2 million years ago s australopithecines had radiated out of Africa. Find Israel, southern China, and Java suggest that they have moved all the way across southern Asia. Howe both the southern China and Java finds are problema Simons believes the Chinese teeth do represent rob

australopithecines, but others
tirely different genus, *Gigantc*
The Javanese fossils, called *Me*
cus by some, might also be ro
However, Pilbeam believes
represent an intermediate st
pithecus habilis and *Homo e*
equal logic be classified as eit

Figure 2.11 indicates the
of the evolutionary lines repres
pithecine fossils. The author
interpretation: *Ramapithecus,*
evolved into two lines of australc
line is first represented some 3.
Australopithecus robustus, whic
lopithecus boisei around 1.6 milli
eventually became extinct. The g

nterpretations of the
ıtionary) Relationships
ɔpithecine Fossil Forms
epresenting each
own. The present
Pilbeam (c)

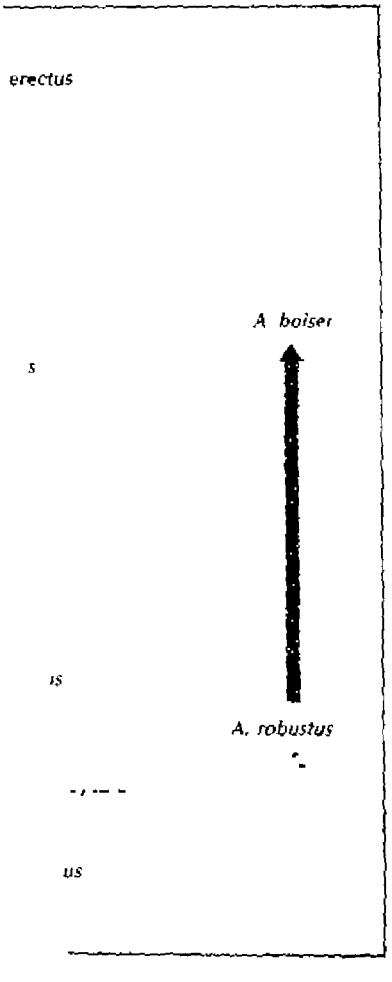


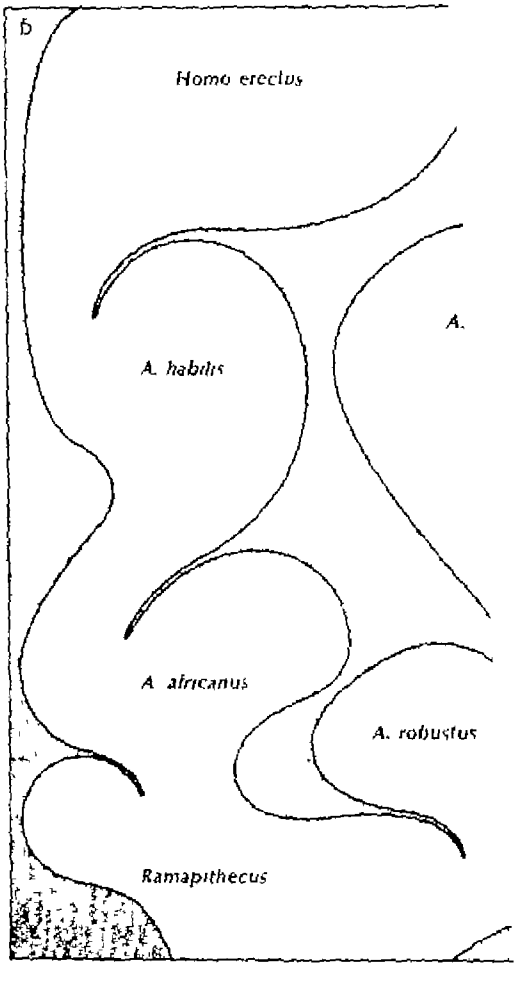
...ion years ago n
tl ecus afr canus wh ch evolved
hab l
eal ey have recently announced
th a cran a capac.ty of 800 cc,
Australopithecus habilis crania
se skulls probably belong to a
estral to *Homo erectus*, yet are
ld. But this discovery need not
icture. Although the Leakey's
nd other recent finds near Lake
region of Kenya represent a line
eparate from the australopithe-
have found evidence that *Aus-*
volved earlier and had a wider
l features than we had previously
it still seems reasonable to argue

that *Australopithecus* africanus evolved from *Australopithecus* afarensis which in turn evolved from *Australopithecus* ramidus about 4 million years ago.

The Origins of Human Culture

So far our discussion of human c
on the nature of the skeletal rem
hominid ancestors. But the outsta
modern human beings is perhaps the
cultural systems they have develope
has become the major means throu
beings adapt to their environments
evolved, modern *Homo sapiens* los





gramming (instincts) as a source of spec
on how to deal with the environmer
depend heavily on culturally learned be
a sense, culture itself has become on
environments to which human beings
We have evolved into culture-depen
with a body shape, a central nervou
physiological characteristics that are s
and enhance—this dependence. Cliffor
matically expresses the complete intero
biology and culture:

> There is no such thing as human natu
> dent of culture. Men without culture
> be the clever savages of Golding's *L*
> *Flies* thrown back upon the cruel wisd
> animal instincts; nor would they be .
> sically talented apes who had someho
> find themselves. They would be u
> *monstrosities* with very few *useful*
> fewer recognizable *sentiments*, and no
> mental basket cases. As our central
> system . . . grew up in great part in in
> with culture, *it is incapable of direc*
> *behavior or organizing our experience*
> *the guidance provided by systems of s*
> *symbols* (1966:49; emphasis added).

A reasonable question, then, is: when
culture evolve? Pilbeam and Simons (1965) l
Ramapithecus might have been a tool-using
might even have had some bipedal tendenc
tools have been found in association with *l*
cus—nor, for that matter, with any of the aus
cines other than *Australopithecus habi*
scholars presume that the gracile australo
were able to survive as relatively small,
dwelling bipeds by using items in their en
such as sticks, bones, and unmodified stones
much as chimpanzees have been observed
their natural environment (van Lawick-Gooc
But the first manufactured stone tools are fi
ambiguously only in the presence of *Australo*
habilis.

These tools are called *pebble tools*. The
of pieces of flint that are somewhat larger
size and that have had some six or seven flakes

Figure 2-12
Two Methods of Diagramming Phylogenetic (Evolutionary) Relationships among Fossil Populations

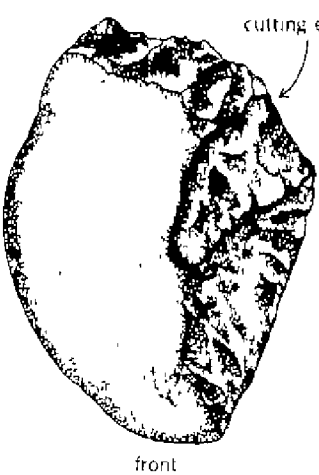
Style *a* is easier to read but it distorts he materials by suggesting sudden beginnings and ends for the existence of ossil populations. Style *b* is more difficult to read, however, it has the virtue f suggesting gradual evolutionary development from one fossil population to nother. It also illustrates how one fossil rm can evolve into another yet later exist with the new form. This model ould be kept in mind throughout the scussion of hominid evolution.

off them. What remains is a *core tool* (
used), very rough and unfinished and
pounds. It can be used to crush th
game, to skin them, and to dissect t

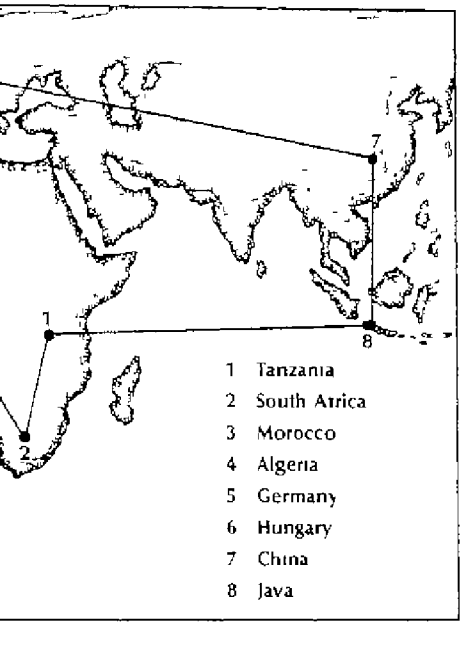
Most scholars associate these to
ginnings of a diet that regularly incl
obtained as the result of deliberate (
organized) hunting. Although their
ably still mostly vegetable in nature,
habilis groups did systematically dev
of small game: rodents, birds, bats, ins
fish, crabs, and turtles. On occasion
hunted big game as well. At Olduv
Africa we find the remains of a primi
was apparently driven into a swamp a
death. Its bones were scattered nearb
to our ancestors' butchering and d
(Butzer 1971:427).

Although modern human being
from this gracile line of australop
survived competition with other sp
sources of the early Pleistocene savan
draw the pessimistic conclusions tha
and popularizers of anthropology a
study of animal behavior) have offere
Robert Ardrey (1961, 1966, 1970) an
(1966) argue that australopithecine





provided the evolutionary origin of
But they fail to appreciate that the outs
ment at this stage of evolution was
of patterns of *cooperation*—patterns
mental to the evolution of human cult
and 4).



ure 2-14
ographical Distribution of
mo Erectus
e more advanced culture of *Homo*
ctus enabled some of these groups to
abit far colder climates than had any
vious australopithecine populations
t surprisingly, it was *H. erectus* who
t controlled fire in Europe and China

The Great Expansion

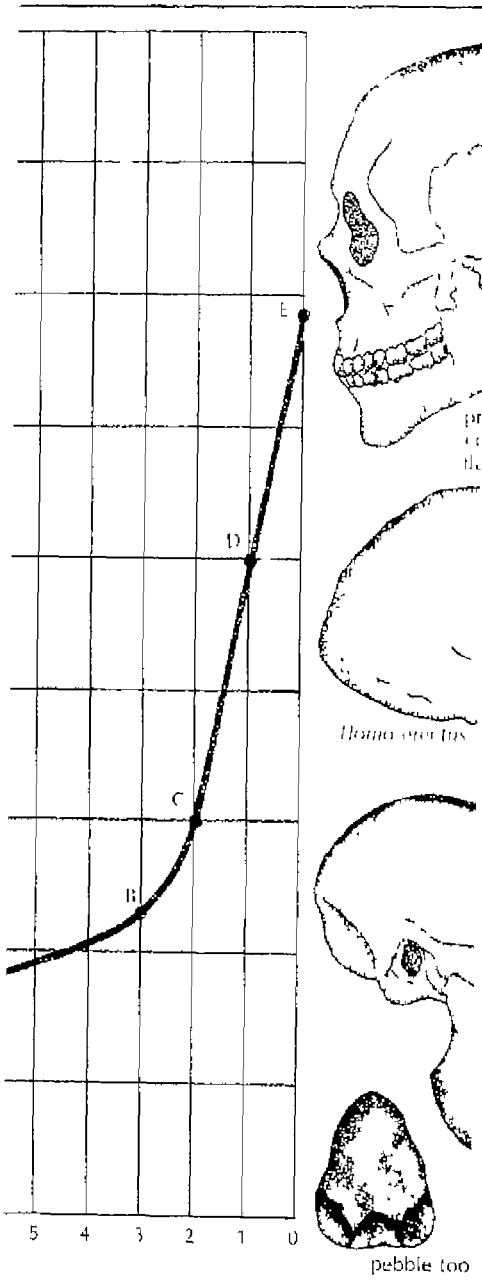
By the middle Pleistocene, betwee
years ago, our ancestors seem to hav
dispersed throughout the Old World
ago they had certainly spread from
Europe, and they extended across the
into the far reaches of southern Asia b
years ago. Although there is consi
skeletal variation, most scholars agree
line was represented by one specie
which had evolved in Africa from
habilis and had begun to occupy th
that were previously inhospitable to

Homo erectus was about five feet
and limbs that were within the range
variation. The only "primitive" featur
was its head, which exhibited such
ridges of bone across the eyes; a mini
sloped back dramatically; a narrow
behind the eye orbits and a slight s
of which suggest heavy facial mu
cranial capacity averaging around 1,0
lowest limit of the range for mode
(Williams 1973: Chap. 10).

For over 1 million years, until abo
years ago, *Homo erectus* roamed acro
In Africa these early humans develo
called a *hand ax*, which apparently
out of the pebble tool of the australo
axes, like pebble tools, are cores;
chipping flakes off a flint nodule and
ing core as the tool rather than usi
whereas the makers of pebble tool
away part of the stone to make a
producers of hand axes actually m
trimming it all around to achieve a de
1974:84–90). This in itself suggests

evolving and that technical skil
the environment—was increasin

All australopithecines had li
—subtropical savannahs near
which they produced only one t



the pebble tool. *H*
wider range of envi
clearly more adapt
were. Consequently
stage of evolutionar
ecines. But althoug
the evolution of the
sion of the brain, it
of evolution culture
did not have to evo
forms in order to ad
colder) ecological
Homo erectus adapt
primarily through c

Homo erectus a
technological trad
regions of the Old
these was found at
the *hand ax* or *Ch*
the pebble tool tra
hand ax culture are
ently spread from
Africa, southern Eu
parts of Africa this
ago (Fagan 1974:84-

The hand ax tra
stage, called the
lasted from 600,000

) Hand Ax
two early hand
, Bed II (9/16
mplex is asso-
of *H. erectus*,
P. It is the first
lition



front

od

t is the Chellean hand ax, a core tool
but not all, of the surface has been
the pebble tool, it was made in one
s of chipping away the outside layer;
ore flakes were knocked off—about
ive pieces—producing a more versa-

age of the hand ax tradition, the
lasted from 400,000 to about 60,000
heulian hand ax was made in two
ntire outer layer of the flint nodule
n the tool was carefully shaped into
. In Europe this form tended to be
frica it was larger, with straight sides.
ly contemporary cultural tradition
chopper tradition. Like hand axes,
o core tools, but they were merely
directions along one edge to pro-
ting surface. As with the Chellean
rs did not remove the entire surface

oth the hand ax and chopper tradi-
s were also used for cutting and
69:37), it was the third tradition, the
e of the northern areas of western
a, in which *Homo erectus* did not
choppers at all, but rather knocked
lumsy flakes off nodules of flint and
nstead of the remaining core. The
may have begun as early as 600,000
sted until about 60,000 years ago.
Clactonian flake tools were not
versatile than were hand axes, the
ight use flakes rather than cores
the basis for another great cultural
ution of Middle Paleolithic culture

discuss this further advance, let us
of *Homo erectus*'s accomplishments.
ols of the three major technological
axes, choppers, and Clactonian flake
ly humans produced a variety of
diverse flakes, produced as by-
process of making core tools, were
rmed into scrapers, knives, cleavers,
and chisels. These could be used
animals, preparing hides, and carvin
may also have been used to collect

Both wood and bone were also
Spanish site of Torralba, some 400,0
provided evidence that the long bone
animals were split down the middle
make knives, picks, and cleavers. Fo
site are pieces of pine that have be
or sharpened. At Lehringen, Germ
of a six-foot-long wooden spear that w
the ribs of an elephant some 125,00
been recovered. *Homo erectus* was
ture to control fire, as indicated b
hearths, charcoal, charred bones, and
various European sites of 400,000 yea
even earlier (Butzer 1971:445). Simila
the use of fire by *Homo erectus* near
time It is not surprising that this inv
in the northern latitudes where the
quite cold. Fire diffused southward
not have reached sub-Saharan Africa
cene times (Clark 1960).

Home erectus was also apparently
to build full-fledged structures for s
elements. A site about 300,000 years o
near Nice, reveals the presence of h
indicated by: (a) imprints of a s
each averaging about 8 cm. in
were driven into the sand to form
shelter; (b) lines of stones, parall
imprints, and occasionally stacke
other, apparently to brace the
shelter; and (c) impressions of th
the central axis of the structure
446).

Nor were these structures small; t
around twenty-five to forty-five feet
thirteen to twenty feet in width. T
shape, and the floors were covered w
(for beds?), ashes (from fires for hea
cooking), and waste flakes from the p
(Butzer 1971:446).

These huts are the earliest evide
hominid groups were divided into su

conjecture that these subgroup
lines of blood relationship ar
earliest form or forms of the f
tionary history.

How did *Homo erectus* popu
most part, they continued the
way of life of the advanced aus
added emphasis on the hunting
elephants, horses, pigs, hippop
and even wolves and lions. Mar

2-17
ian Toolkit
ian tools from Kalambo Falls, Zambia,
nd side views (one-fourth actual
his represents the second stage of
nd ax tradition, which evolved out
first stage around 400,000 B P



hand ax

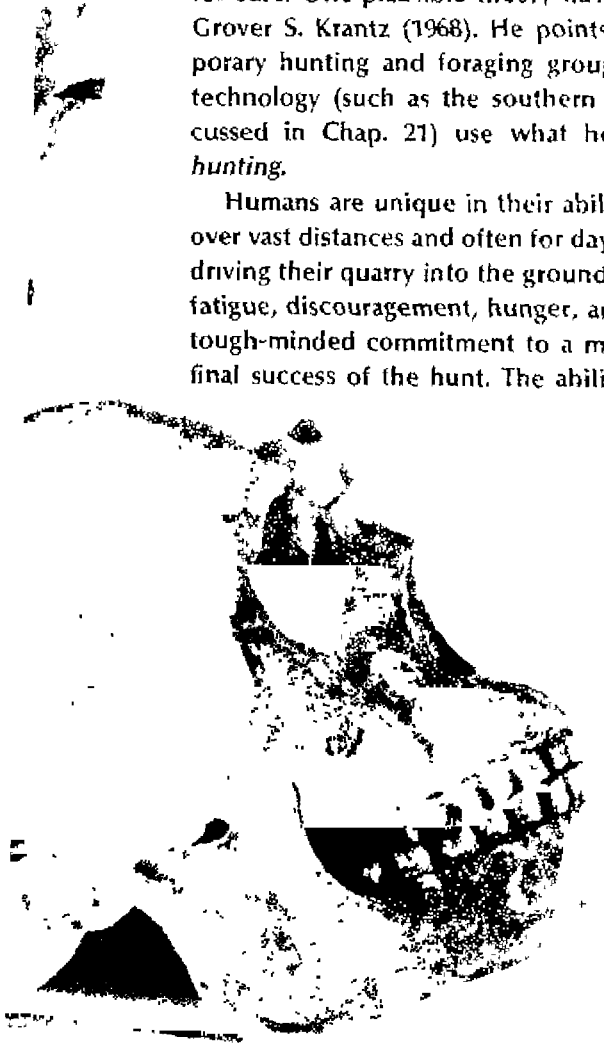
2-18
of the Asian Chopper Tradition
de chopping tool from Choukoutien.
, front and side views (three-eighths
size)



driven into swamps and bogs, possibly to the grass. Baseball-sized round stones attached to leather thongs and used it to entangle the legs of running animals opposed to the gathering of vegetable f became increasingly important as groups humans migrated out of the tropical a areas and into colder temperate region were seasonally scarce (Butzer 1971:448

Clearly, *Homo erectus* was both b culturally more advanced than the aust What caused this evolutionary progress from *Australopithecus habilis* to *Homo* 1 million years ago in East Africa? We n for sure. One plausible theory has bee Grover S. Krantz (1968). He points ou porary hunting and foraging groups v technology (such as the southern Afr cussed in Chap. 21) use what he c. *hunting.*

Humans are unique in their ability over vast distances and often for days a driving their quarry into the ground. T fatigue, discouragement, hunger, and tough-minded commitment to a men final success of the hunt. The ability

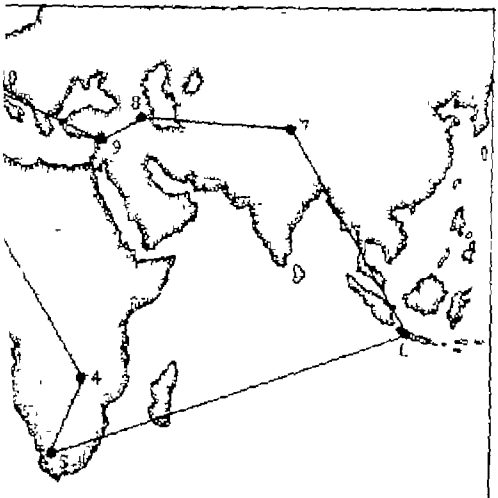




of the Kalahari desert
ging home a skinned
has found and dug
ing and stalking the
d patience. But
he technology to
me, these hunters
animal they have
oned arrows for days
ysical ability and
ive or determination
austing task contri-
e's ability to survive
e that our early
volved their upright
east, in response to
on them by this
hunting, which was
ble to them given
nitive technology.

image for motiv
successes. One
transition from t
of *Homo erectu*
of the brain and
suggests that th
make possible a
selective advan
better able to k
their hunting be

Why did our
a survival techn
this form of b
for the fact that
an adaptation to
form of locomo
specializations,
ones.



nd West Germany
6 Java
7 Uzbekistan
8 Iraq
9 Israel
f South Africa
10 Italy and Yugoslavia

ure 2-19
Geographical Distribution of *Homo iens Neanderthalensis*
nderthal groups in Europe inhabited ter extremes of environment than any previous hominid form, living ir north as the ice sheets of the m glaciation would allow in arctic ra environments. They were able to is because they had developed a lently complex and versatile tech- ly.

Hunting was not the only behavior evolution of both bipedalism and the havior was promoted as well. Under *behavior* we include the ability to through spoken language (see Chap. 7 to organize social relations, and to p from generation to generation. These al were selectively advantageous in that *Homo erectus* to be more flexible in so lems posed by the various environmer humans occupied. Thus they repres aspects of the process of general evo history of our species.

The Arrival of Homo Sapiens

The most recent evidence suggests th 300,000 years ago the hominid populati Africa and Eurasia were practically mo beings.

Their brain size was well within the modern man and their bodies were indi able from ours, though some of the earl tions may have been rather more rob their heads still looked strange, with lo and heavily built faces and jaws. Thro evolution of *Homo sapiens* during the las years, we see the final reduction of the the appearance of man's chin. As the jaws smaller, the whole face shrank and recede the brain case, so that it became surm by a vertical forehead. This changed the of the head, and the long narrow skull o *erectus* became the rounded skull o modern populations (Campbell 1974:111)

The earliest remains of *Homo sapiens* are al Europe and date back to between 300,000 an years ago. The fossil record for the followir years is extremely sketchy (see Campbell table 3.7). Only for the most recent 100,000 we have enough remains to reconstruct th tionary sequence with reasonable accuracy.

The skeletal remains indicate that *Homo* probably evolved in two stages. The earli lasting from about 300,000 until perhaps 70,0 ago, is called the Neanderthal stage—technicall

as *Homo sapiens neanderthalensis.* I
stage are found all across the Old Wo
through the Middle East, down into
and across Europe into the north just b
nental ice sheets. We also find Neande
in southern Europe (Campbell 1974:111

Homo sapiens neanderthalensis varie
in appearance; these people acquired
jawed and most robust forms in the nor
which they were the first hominids to o
areas the cranial capacity of Neandert
averaged over 1,400 cc, roughly 100 cc r
of modern human beings.

Classic Neanderthal Male,
s limey concretions
vater in the burial site



The transition from the Neandertha
modern human beings called *Homo sa*
was very rapid in some places and grad
In western Europe the transition was so a
35,000 B.C. that most scholars believe
human beings invaded the area, proba
Middle East during a temporary retreat
glacial. In South Africa, *Homo sapiens nea*
and Homo sapiens sapiens appear to have
side for a while. Only in the Middle East
covered a series of progressive changes, sta
70,000 years ago, that show the evolutior
jawed, smaller-skulled, slightly lighter bo
Homo sapiens sapiens from the more re
sapiens neanderthalensis (Campbell 1974:1

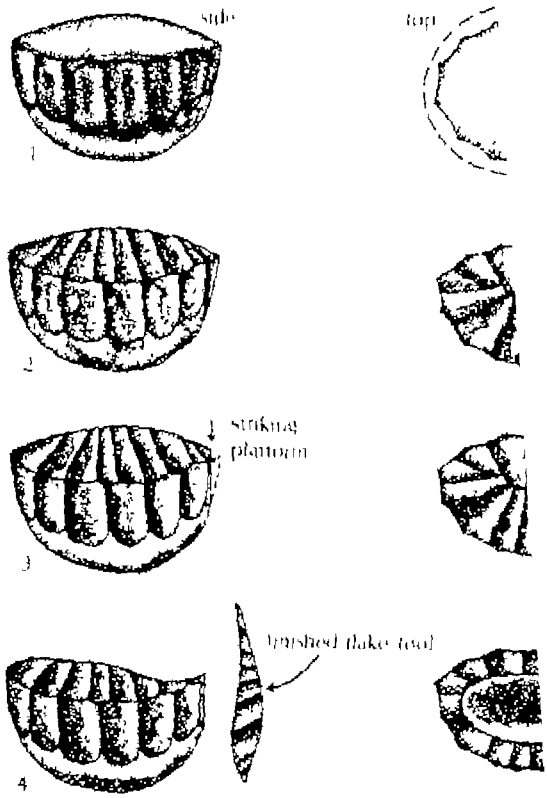
> The simplest hypothesis on the basi
> present evidence is that modern fo
> appeared in western Asia or northern A
> soon spread south, moving later to east
> and finally to Europe. We might expect
> jawed forms to have survived longer in
> areas. We do not at present have eno
> dence to determine whether the bi
> populations were genetically swamped
> invaders, were exterminated by them, or
> into their successors. Just one thing is
> the genes of the big-jawed people s
> longer in Southeast Asia than elsewhe
> have made a substantial contribution
> aboriginal people of Australia, who ha
> largest jaws and teeth among living p
> (Campbell 1974:112).

Although on a biological level
step from the stage of *Homo erectu*
Homo sapiens neanderthalensis was ta
years ago, no significant cultural ch
until approximately 70,000 years ago,
the Würm glaciation in Europe
chopper, and hand ax traditions (whic
tralopithecine pebble tool tradition,
called Lower Paleolithic culture) contir
unchanged in their respective areas of
though our ancestors were evolving bi

In Europe, however, a new form of s
nology eventually evolved out of the l
and Clactonian cultures. The Neandertha
in this northern and increasingly colde
developed a way of producing versatile,
tools consisting of flakes rather than co
were not the relatively unformed and co

igure 2-20
he Technique of Prepared-Core Flake
ool Production

he making of a Levallois flake tool.
1) the sides of a stone are trimmed,
2) the top is then trimmed, (3) a small
raight edge is trimmed on the side to
ake a striking platform, the point where
e flake will originate, (4) a flake
ose shape is thus pre-formed is struck
m the core. Prepared cores were
igned to enable the toolmaker to
duce large flakes or predetermined
pes



the Clactonian culture. Rather, these people first carefully preshaped flint cores and then knocked off the flakes, which thus had predetermined shapes. These preshaped flakes were further modified into a vast array of specialized tools, including knives, various kinds of scrapers, and spear points that were fastened onto shafts (Fagan 1974:109–111). This process of producing preshaped flakes often produced flake tools with backs that look like turtle shells; for this reason they are often called *tortoise-back* flake tools, as well as *prepared-core* flake tools. This type of tool is typical of the Middle Paleolithic stage of cultural development.

Because people had greater control over the shapes of these tools, they could make much more specialized implements that were well adapted to their particular ecological niches. Thus during the Middle Paleolithic we find a great deal of regional differentiation in technology.

In the northern areas of Eurasia the Middle Paleolithic *Mousterian culture* developed, with a great emphasis on projectile points and scrapers—tools that were used for hunting, woodworking, and the preparation of skins. These northern Neanderthal people migrated seasonally, following the large herds of mammoths, reindeer, and horses into the subarctic tundra areas during the summers, and retreating in the face of the winter cold to more temperate European environments (Fagan 1974:110–111).

In the warmer parts of Europe near the Mediterranean Sea, Middle Paleolithic Neanderthaloid peoples produced less finely made tools than their Mousterian neighbors. Although similar in form, these *Levalloisian* tools were larger and less specialized than their Mousterian counterparts and probably reflected a less demanding environment. These people lived in caves and rock shelters and probably stayed at their home sites all year, gathering vegetable foods and hunting plentiful game as needed.

Technologically, Middle Paleolithic culture clearly represents evolutionary progress over Lower Paleolithic tools. A typical prepared-core flake tool is produced in four distinct stages—trimming the surface off the nodule, preparing the core, knocking off the flake, and retouching the flake with fine pressure flaking—a far more complex process than the two stages necessary to


side

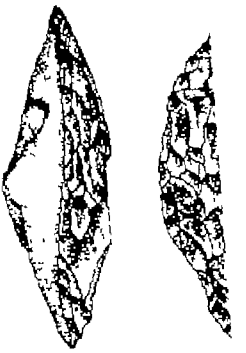

side

Figure 2-
Levalloisi
Core Flak
Pretrimmi
retouchin
Middle Pa
a large va

nced hand axes. With this new level of
human beings were able to penetrate
n latitudes never before inhabited by
d survive there for many thousands of
tools were more *adaptable* than their
and were carefully *adapted* by their users
lar demands of the specific environment
ccupied.

e Paleolithic culture represents far more
chnological progress. In Chapter 13 we
whole new form of thinking emerged at
orm that we call *transcendental beliefs*.
lence that *Homo sapiens neanderthalensis*
ed beliefs about the nature of things far
mmediate reach of the senses; specifically,
parently developed religious beliefs. For
in the unfolding of human evolutionary
ind evidence of systematic burial of the

we find Neanderthaloid remains—from
steppes through western Europe and
the Middle East—we find carefully buried
ns. Some have been tied in fetal positions,
unded with hunting trophies, others
morsels of food, and many sprinkled
der made by grinding colored soils. In
in northern Iraq, Ralph Solecki even
idence that some corpses had been
lower petals (1972).

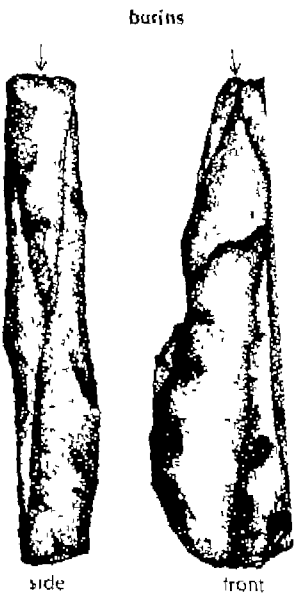
leolithic Neanderthal people, then,
l of technological and cultural develop-
sented a new evolutionary stage. Com-
d highly adaptable, Neanderthal culture
asis for the evolution of the infinitely
complex, ecologically flexible cultures
an beings (Fagan 1974:115–116). Middle
re flourished across vast reaches of the
Europe to Asia and Africa for some
ears. Then around 35,000 B.C. a radically
ure emerged. This new culture is called
ithic, and the people who produced it
mo sapiens sapiens.

modern human beings evolved is still
nentioned earlier, the only area where
equence of skeletal remains changing
from Neanderthaloid to modern hum
East, and many scholars believe tha
sapiens evolved there. Others expand
clude East Africa, western Asia, Ar
(Brothwell 1963), but the evolutionary
have taken place over even broader are
rates The question must remain open
mains have been found (Fagan 1974:12

Upper Paleolithic culture is custo
by the invention of stone blade tools.
should note that blades in cruder fo
around for a long time, even as far back
lian culture. Upper Paleolithic peoples
Europe—produced sophisticated blade
blade tools that represent the ultim
refinement in stone tool making. The b
tially a long and narrow flake that is k
carefully prepared core. Upper Paleolithi
came superbly adept at controlling the siz
of their blades. They developed precise
applying pressure to blade surfaces, chip
nute flakes, and fashioning intricate and d
tools, varying from chisels (known as *burin*
for bone and wood carving to delicate proj
knives, scrapers, and drills. But impressi
tools are, the outstanding characteristic
Paleolithic culture is its versatility and the
rate of cultural change that enabled loca
adapt to their particular environments a
them efficiently (Chard 1969:126–129).

Upper Paleolithic people conquered m
world's remaining frontiers. They crossed
Bering Strait and populated the New World
between 20,000 and 45,000 years ago. Th
on the seashores developed sophisticate
techniques, including bone fishhooks, nets w
and harpoons for hunting seals and poss
whales (Clark 1952: chap. 3). Inland groups hac
advanced toolkits and produced ingenious ne
tions, such as the spear thrower. From the evi
the sharp bone needles they produced, we
that many of these peoples apparently tailo
leather clothing.

However, the culture trait for which E
Upper Paleolithic cultures are most famous



igure 2-22
Jpper Paleolithic Stone Tools
urins and scrapers, made from blades, are ypical Upper Paleolithic artifacts. Burins vere used for carving wood, bone, and ntlers, which were used to fashion spear nd harpoon points. Arrows indicate the hisel ends of a burin formed by striking tiny akes off the end of a blade. End scrapers vere used to shape bone and wood. Whereas burins were used for fine line ngraving and delicate carving, end scrapers vere used for larger (less delicate) tasks.

magnificent artwork. Fou
of southwestern France a
work evolved rapidly from
tween 30,000 and 27,000 B.C
(18,000–15,000 B.C.) and Ma
phases (Leroi-Gourhan 19
art included extremely natu
tures of many wild anima
realism and dynamism. Alth
at first limited to crude sket
artists gradually achieved
materials. At its peak, Uppe
carefully carved and engrave
grease were used to apply b

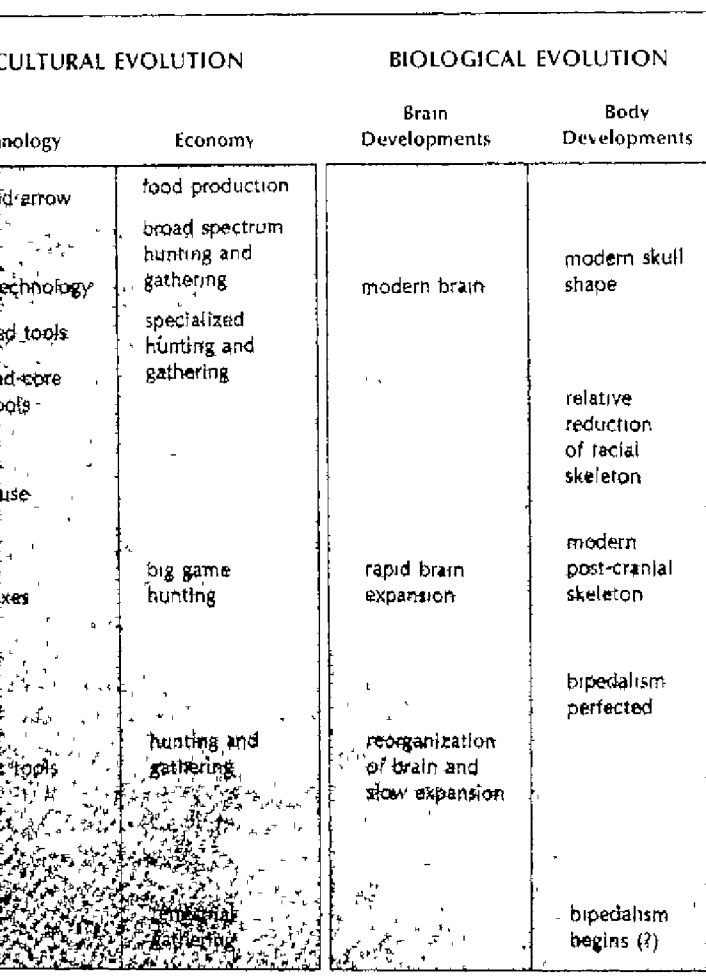
It is even possible that
form of lunar calendar. Alex
posed a controversial interp
graved dots on a piece of rei
computer analysis, he discov
aligned in a curved band on
a statistically significant mann
If this theory is correct, humar
region of France were making
than 30,000 years ago.

which ended some
rming of the earth's
oved at an almost
changes have been
an in the biological
continued on both
pters will provide its
evolution of social
lopment of systems
ubsistence activities
11), belief systems

(Chap. 13), and so forth. What remai
put the materials of this chapter into
does it all mean? The following poin
understanding human evolutionary

Since the early differentiation of
cultural and biological evolution h
namic relationship. Over all, homi
logically less and less specialized, ex
such as erect bipedalism and the
human brain—that facilitated cultur

Increasingly, the hominid line u
than biological means to adapt to t
range of environments that were b



Cu n

There is a significant difference be
and cultural evolution. Genetic nove
occur randomly, and thus there is no
ing direction to biological evolution.
such as inventions or the adoption
other cultures, however, are often t
scious deliberation. They are attemp
lems posed by the environment. Beca
cultural evolution is in some respects
intentions of cultural innovators, it is
whereas biological evolution is inhe

However, the same principles
change—involution and evolutionary
in both the biological and cultural
tralopithecine materials provide us
both these principles at work. The
sented an advance over *Ramapithecus*
became so specialized in its vegeta
large, heavily muscled body that it
as long as its environment did not
This is involution. Evolutionary prog
the gracile line of *Australopithecus*
shape remained less specialized, and
able enough so that through natural
become the culture-carrying form
evolved into *Homo erectus*.

Similar circumstances account fo
European Neanderthal people. At
off from other Neanderthaloids by th
Würm glacial, these groups becam
voluted through natural selection
At the same time, they were isolated
evolution occurring in the Middle E
Paleolithic culture was evolving into
culture. Thus they apparently were u
their separate existence when, 35,000
retreated somewhat and Middle E
the modern human biological type a
advanced (Upper Paleolithic) level
into western Europe and abruptly
anderthal people and their culture.

This leads to an interesting propo
gard the contemporary industrial s
voluted societal forms that are extre
to the social and environmental wo

Cultural and

n cultural and bio-
appear on this table
od indicated by their
ssumed to continue
replaced or refined

either the social conditions or such as the availability of energy these societies are predicated o involuted to provide the basis v social forms. This proposition e of the world may lie with the rentiated societies of the Third ate the technological expertise e advanced societies, they will ptive flexibility to create new re socially productive priorities, hat industrial civilization has to ilized, rigid structural elements eties, it appears, belongs the step of evolutionary progress

human origins have taken place t the core concepts of evolu—was discovered only in the y by Alfred Russel Wallace and

ge that occurs over generations al forms adapt to their environhange may be specialized (inlve development to a new level y (evolutionary progress).
is the product of changes in in a given population (genes mine the potential for biological ristics). Four mechanisms conequencies: (1) *mutation,* resulthe chemical structure of genes; ing from the isolation of a small om a larger one; (3) *gene flow,* rbreeding of previously isolated *atural selection,* resulting from es that favor some characteris-

f the patterned behavior that re taught as members of groups. l evolution are in a state of con-

tinual interaction. Cultural evolutio two main mechanisms: (1) the inve cepts or the discovery of new knov diffusion of knowledge and concep to another.

Human biological evolution may basis of fossil evidence, from the p human (hominid) and ape (pongic The evolutionary sequence is still a but it seems likely that modern scended from *Ramapithecus,* which 14 million years ago, through various forms to *Homo erectus,* and then *sapiens sapiens.*

Archaeological evidence points t tion among hominids at the end of cine line. This evidence takes the fo evolved from simple pebbles to ha tually to finely shaped and specia By the time of *Homo erectus,* we dwellings, fire, and some forms of s Earlier forms of *Homo sapiens* ap transcendental belief systems, and Upper Paleolithic peoples develop phisticated technology and complex artistic) forms.

Annotatec Bibliograp

Ardrey, Robert (1961) *African Genesis* New

(1966) *The Territorial Imperative* New York

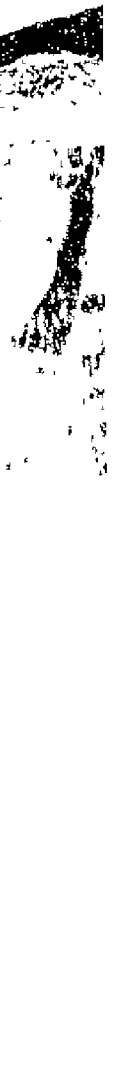
(1970) *The Social Contract* New York Dell

These books present a popularized acco of human society The presentation is en by a professional journalist, but bad scie society and its shortcomings (especia aggression) are interpreted as an expres able biological characteristics of the hur tion, starting with the australopithecine to Ardrey, fell from grace when they g vegetarian, contemplative way of life and the eating of meat, and thus an agg prone life-style

Geertz, Clifford (1973) *The Interpretation* York Basic Books A fascinating collectio of America s most provocative, intellec anthropologists Especially pertinent are Description Toward an Interpretive Th "The Impact of the Concept of Culture Man," and "The Growth of Culture and Mind"

Greene, John C. (1959) *The Death of A* Mentor A philosophical and historical i intellectual roots of the concept of evo

Service, Elman R. (1971) *Cultural Evoluti Practice* New York Holt A collection c previously published) that presents a c approach to evolutionary theory The co is applied to both biological and socio veloping many of the concepts used in



3
The Evolution of Social For

Human Social Origins Myth and Science

All human cultures seem to shar
tience with the unknown, and thus a
solve the intriguing mystery of how t
and human societies evolved to th
The explanations vary from one cultu
within each culture they are deepl
mitted as indisputable fact from gen
tion. All human beings are provide
with a creation myth in which their
arated from the rest of the anima
which their biological and social d
plained. These myths always have a
that is, they reveal to human beings
males and females act differently, w
social behavior are supernaturally
tioned, and why the traditions, v
of one's own culture are naturally su
In Judeo-Christian mythology, for in
Eve are not merely the propagators
the personification of male-female

otation, good and evil. Such folk mores and values ome indelibly fixed in the consciousness of in- luals everywhere, whether they are Eskimo fisher- , African kings, Peruvian peasants, or American lars.

n an important sense, Western science is simply ltural elaboration of this seemingly fundamental an obsession with the unknown. And because science grew out of a single cultural tradition, perception of the world is necessarily skewed his heritage. Anthropologists, like other scientists, t eliminate from their discipline mystical associa- s specific to their own culture. But the mainte- ce of total objectivity is especially difficult when 's subject matter is the full range of human cultures behaviors, some of which may appear strange he outsider. For example, why do people in some eties hunt heads, have multiple husbands or wives ultaneously, kill their infants at birth, or abandon r elderly and helpless parents to carnivores? Only ugh a conscious effort to place herself or himself nother perceptual framework can the investigator erstand how such customs may promote the sur- l of a population in a particular environment.

Cultural bias, or what anthropologists call *ethnocentrism*, is perhaps an even greater danger when theorist attempts to reconstruct extinct societies can no longer be directly observed. For example, e Paleolithic hand axes really used for hunting, or e they primarily tools for pulverizing vegetable ter? Did *Homo erectus* males and females marry form conjugal families, or is this domestic portrait ojection of our own preconceptions?

This is the problem in this chapter. If we are to pose a scientific theory about human social origins the evolution of human society over the past few ion years, where shall we look for clues? To rely ly on intuition would be to lapse into mythological lanations. And to use ourselves or peoples from pler societies as models for ancient human or ninid behavior may be very misleading.

To avoid this apparent dilemma, anthropologists ically have attempted to use data from three areas: contemporary primate behavior, (2) ancient cul- es, and (3) modern human societies of varying complexity. The rationale for studying the fir assumption that all primates share a comn and that by observing their social beha learn more about the biological roots of h The reason for investigating the second because the artifacts of modern societies to those found in ancient cultural dep pologists believe that they can reach vali about these extinct societies. Underlyi of the third area is the assumption that th range in the technological and organiz plexity of contemporary societies thr world roughly approximates stages in of culture—that these existing societies least in outline, survivals of ancient cult whose remnants are found in archaeolo

Most anthropologists agree on the relevant to the problem of reconstructi cial and cultural evolution, but their inte these data often differ. However, two ba typify much anthropological thought century: the *classificatory* and *adaptation*

The Classificatory Approach

The classificatory approach may be identification of structural regularitie world's cultures, and the subsequen of a limited number of types that are progressive sequence. In other words, surveys a large sample of contemporar chooses a feature, such as the nature that appears in all of them but that has in almost every society. On the basis o found in this feature, a number of typ are created into which, ideally, any kn be fitted. These types are then ranked ing to their relative complexity, on the tion that cultures have evolved from sin

This classificatory or typological popular among Victorian scholars an herents today. Elman Service, for ex general stages in the evolution of c the nature of social and political life he proposes five levels (the band,

n) o ncreasingly
esult is a useful
ary peoples and
ancient peoples
ar forms of social

A weakness of this a
evolution is that becau
creation of typologies th
of diverse ancient and m
dimension, little effort
cultures evolve from one



The Adaptational Approach

Theorists using the adaptational ap
marily concerned with what causes cl
change occurs. They identify the regula
change by analyzing the dynamic intera
human populations and their environm
ogy of a culture. The underlying assu
in order to survive, human beings must
selves into social, economic, and politic
somehow fit in with the resources and
particular environment. If an organizat
the survival of the population (for exam
nization of men into cooperative hun
then it is said to be *adaptive*. An importa
is that if any feature of the environm
corresponding changes must occur in the
organization if it is to maintain or improv
of survival.

The concept of adaptation thus offers
predicting which types of social organiza
expect to find under given environmenta
The concept also provides a tool for un
how and why societies pass from one ty
nization into another. With these techn
we not only can identify stages in the e
human culture but can also offer hypothese
this progression of social forms.

The adaptational approach is certainly
although it seems to have been rediscovered
pologists only recently. Karl Marx and Fried
first applied it to cultural phenomena in the
century (for example, see Engels 1972, orig. 1
believed that the nature of economic institut
people produce and distribute wealth) larg
mines the nature of their social, political, an
ical systems.

The more contemporary evolutionary
Leslie White (1943, 1949, 1959) is in many wa
to that of Marx and Engels. White sees huma
as consisting of three basic systems: technoe
social, and ideological. He strongly empha
importance of the technoeconomic aspects of
as measured by the ability of a given culture to
and produce "energy." White argues that thr

An Apache Chief with his family
Although we are used to calling people like this Apache "chiefs," the use of this term distorts the nature of their society, which falls into the category of social organization that Service labels *tribe*. Such societies are egalitarian, with no centralized hierarchy. They hunt and forage for food and do not produce a surplus which a central authority could collect and redistribute. Thus leaders have no economic and no formal political power. Rather, they are able to lead by living exemplary lives themselves and using moral persuasion to induce others to follow their suggestions.

left, a tuli
and wheel-
ss peasants
forms the
for a local
man or
ter") caste
ons a steel-
rons
basic
cultural
lly his
other has
ools at his
the
an is
ndian
much
work

the development of hu
nological sophistication-
tural, industrial, and ni
available greater and g
amount of energy captu
lieves, plays a major role
ideological aspects of cu

In this chapter we wil
stages in cultural evolutic
of this evolutionary proc
will be that the requiren
environment shape a po
and political organization
first examine nonhuman p
differences in activities rela
them from our own fossil a
sider in detail the distinc
for survival—cooperative s
operative offensive-defens
economic adaptations: (1) h
ing, or foraging, (2) hoe c
(3) intensive farming, or a
trialism. Our hypothesis wil

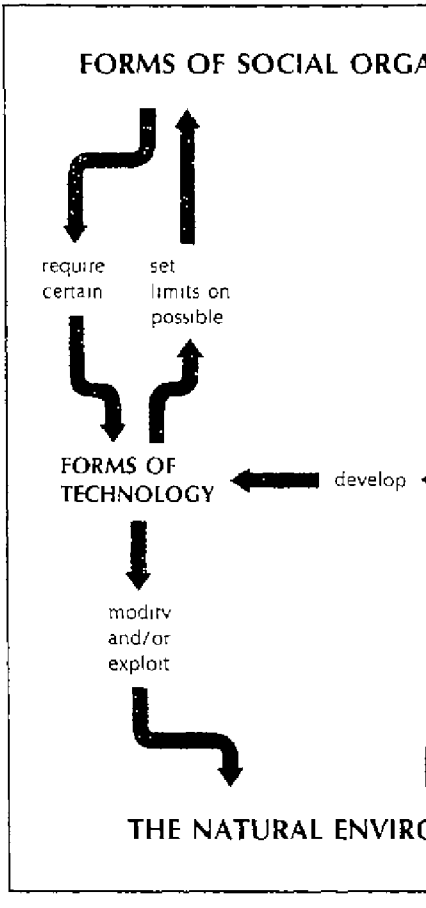




social organization are shaped in a
by the nature of the ecology, and th
social forms has always been prec
damental change in the econom
societies.

Survival, Labor, and Socie

All species have certain built-i
survival. Young mammals experienc
of dependency during which they le
plex behaviors required to sustain l
Some mammals, such as the mounta
to live alone, interrupting their solit
duce. Other mammals, such as wolve
and humans, learn to depend exten



3-1
matic Representation of the
nship between Forms of Social
zation, the Natural Environment,
chnology

ny capitalized label and follow
ow leaving that label Read the
ng that arrow and continue to
capitalized label This will result
mplete sentence Each of the
es you will discover in this man-
resses one aspect of the inter-
of social organization, technology,
e environment (For a more in-
model of cultural and biological
ion to the natural environment
5-1)

of others. All gregarious species seem to be
cally predisposed toward cooperative activities
g to mutual defense and shared territory, which
their survival. Because living in groups requires
some sort of conformity to expected behaviors
ll as patterned relationships among individual
members, gregarious animals are generally
wledged as having a form of society.

social life of gregarious mammals appears to be
ost highly developed among monkeys, apes, and
s. In comparison with other animals of com-
e size and weight, these primates have con-
ly longer lifespans, larger brains, and more
ed periods of infant dependency. In all primates,
l behaviors are particularly important for sur-
Primates are distinguished from other groups
mals by their intelligence, ingenuity, and com-
cial relationships. Since this heritage is shared
living higher primates, we can assume that it
nts a very ancient pattern that gave adaptive
ges to our common ancestors millions of years

What distinguishes human social life from that
keys and apes? At what point in the succession
ent hominoid fossils can we see the origins
velopment of society that is fully human? To
these questions, we must examine the ways in
uman and nonhuman primates relate socially
val.

pecialization and
nan Primate Society

urvival mechanisms of monkeys and apes
ny features with lower-order gregarious spe-
human primates living in exposed, somewhat
s conditions on the open plains, such as the
baboons, have learned to improve their bid
al against predators by developing symbiotic
ips with herd animals of other species. For
the zebra's highly developed sense of smell
nts the baboon's keen vision; hence both
animals benefit from the association. Such
ies alliances are commonplace and require
al social interaction based on the recogni-
tual danger signals.

But we need only introduce a hun
this tranquil scene of baboons and z
the social features that distinguish prim
animals. Whereas zebra rely solely on
of flight for survival, baboons combi
the safety of trees with a critical divis
sibility among troop members. Und
strongest, most able males take up the ta
the intruder. They also play a protect
the troop moves as a unit. Females with
move in the center of the formation, a
behind, they are escorted individually b
males. Males also seem to assume ge
duties within the troop. In contrast, fe
promote the survival of the troop throu
rather than aggressive behaviors. They r
the young but also play the major role
socialization. There is every indication t
have even developed expectations of th
mentary behaviors. For example, in situati
females have been observed pulling the
male protectors, fast asleep in nearby tree
them to their duties.

The males' responsibilities for the troc
are patterned from a young age. By the t
baboon has reached adolescence, he has al
lished his positions of relative dominanc
ordination among his peers and elders. Th
vying in the dominance hierarchy amon
savannah baboons that takes place throu
helps to ensure that only the ablest males wi
intruders, and that the most fit will make g
netic contributions to the next generation th
special sexual privileges that go with domin
ilarly, juvenile females prepare themselves
reproductive and socialization functions in
through nurturant behavior toward infants an
siblings.

Among this highly specialized group of
then, the challenges of the savannah ecol
been met by the formation of troops, with
a primitive form of labor division on the
sex and age has developed. Males are domin
females, and adult males over adolescents. So
have these patterns been in the evolutionary c

abitat For all the
ing plays a great
havior However, it
nare with the other
olutionary history
ratum which
onsequences in
logists, physical
cultural anthropol-
to discover the
understanding of the
es will tell us about

ment of baboo
structural differ
dimorphism—t
and male bod
nounced: Adu
females.

In the past,
vannah baboon
Their sex roles
folk conceptio
behavior has e
aggression and
(see Morris 19
However, rece
a variety of
greater plastici
previously bee
a forest enviro





dramatic
ong his
es are
females,
ften
ir
ng

generally by noncompetitive, nonaggre
ships. Although an informal male rankin
it is not called into play in situations of
access. Forest chimps rely on the prot
on an individual basis to avoid danger
a sex-based division of labor for defens
physical dimorphism among male and
panzees is also much less pronounced.

Much evidence indicates that thes
baboon and chimpanzee behaviors do
from the fact that they are different sp
the social effects of survival pressures
vironments as well. Among baboons
more protected fringes of forested area
the male dominance hierarchy is les
and the frequency of aggression is m
among baboons living in savannahs. A
chimpanzees living in savannah fring
aggression than forest-dwelling chim
sexes tend to jointly attack an intru
Higher primates have the ability to adj
behaviors to meet the survival requir
ferent environments. The basis of thi
fact that much of the social behavior o
apes is learned, and not simply the re
programing.

To sum up, the picture of nonhuman
life that emerges is a variable blend
biological characteristics and primate
mammals, primate males and females
reproductive commitments and hen
different social spheres. The extent
behaviors actually do become different
directly to the nature of the ecologic
occupy. If competition with other spec
niche is high, we find rigidly structure
among males and increased levels of
contrast, noncompetitive environment
courage more convergent male and fe
and less ferment among community m

What distinguishes monkeys and a
mammals is the potential for learning
tion along sex and age lines to meet th
lenges of different environments. Am
primates, this ability seems to have alwa

operative activities relating to defense. But among humans, labor specialization for the purpose rvival took on an expanded and revolutionary nsion.

Specialization and Early Human Society

ost animals experience two immediate threats to al—the lack of adequate food and the danger of ning food for others. As we have seen, nonhuman tes such as baboons strike a balance with other es in their environment and develop specialized anisms for defense within their own communities. resources are adequate, food-getting activities e successfully carried on by individuals under the al protection of the troop. But if the resources of a primate community were suddenly to become quate for survival due to a rapid environmental ge, this might throw a number of species into ous competition for the same food resources. r such conditions, extinction would be the fate ecies that could not exert dominance or that could apidly adapt themselves to alternative resources. e fossil record shows that at some point in nid evolution, probably at the *Homo erectus* (see Chap. 2), one or more species of ancient tes achieved just such a reorientation. The result he origin of human society. Exactly why and how transition took place we can only guess, but rvations of nonhuman primates provide us with vital clues. In a situation of extreme stress, we d expect males in ancient hominid communities to ighly organized for defense and to engage in erative aggressive activities. They may have under- these activities not only against their natural ators but also against those species competing for ame limited food resources. The systematic killing consumption of other animals may have evolved f a heightened struggle for survival.

l human societies are characterized by at least lements: a division of labor by sex, and the sharing od. The same characteristics seem to have been nt in our hominid ancestors. The material arti- of *Homo erectus, Homo sapiens neanderthalensis,* early *Homo sapiens sapiens* (see Chap. 2) tell us little about the regulation of sexuality absence, or nature of marriage. Howev cate something about patterns of ecc tion and community structure.

Archaeological remains (see Chap. by the *Homo erectus* stage, ancient living in small groups of economic individuals of both sexes. Moreover, dwellings or shelters show evidence of ization. These compartments sugges community was divided into food-sha —if the social organization of modern way comparable—may have been ba kinship. We would expect the size such groups to vary according to th resources in an environment. Some have depended primarily on hunting the entire community (such as in the into ambush), whereas others undou heavily on the vegetable products coll Once this very adaptive organizatio communal production and distribu achieved, there appears to have been in social forms throughout the Paleo

Throughout the discussion of p been concerned with the varying related species to mold their soci social groups to changing environ Nonhuman primates have achieved and flexible social organization than mammals; they are able to pattern munity members on the basis of age the ecological niches of modern ba zees, and gorillas have remained allow their survival without furthe This could not have been the case who successfully expanded their c mechanisms for survival to a new fie and distribution of food. From that m and defensive aggression became p to the economic considerations of te and wealth. Humans soon found that contained their greatest competitors predators. It was through ingenuity developed sexual dimorphism, throu

nnate responses that hominid species radiated
ghout much of Africa, Asia, and Europe and
sfully matched their ability to create adaptive
ors against the fluctuating challenges of Paleo-
environments.

onomic Adaptations and Social Forms

ne gregarious species, such as ants, seem merely
acting out genetically based blueprints for
ior. In mammals, however, innate behaviors are
ned with a potential for learning. The greater this
tial is, the more malleable a species' social be-
and adaptive ability becomes. Our ancient
1 forebears, with their progressively superior
ıg capacities, were able to extend their coopera-
tivities from defense to hunting and collecting,
ndividual food gathering to food sharing; and
ıally they were able to form permanent, special-
se groups for political and economic ventures.
first human social groups appear to have been
ups, which are based on an extension of sex
. All-purpose kinship groups (formed around a
of related males and their mates or, alternatively,
a cluster of related females and their mates) are
eristic of preindustrial human societies the
ver (see Chap. 9).
ıe rest of this chapter we will focus on the
human capacity to adapt socially to a variety of
:al niches. We will find that human adaptation
a two-way street: We have prospered through
ity not only to adjust to environmental condi-
ıt also to adjust the environment to human
urely cultural inventions, such as technological
on and increasingly efficient division of labor,
bled humans to overcome enormous obstacles
al. The archaeological record of the past 2
years reveals, however, that humans have
d only a limited number of basic subsistence
: those based on foraging, on domesticated
d animals, and on industrial production. Our
sumption—that the social organization of
i shaped by their ecological niche—is sup-
the fact that humans have developed only a

Figure 3-2
Subsistence
This chart is
It oversimpli
the materials
more state a
in fact are

Marriage Form	Dominance	Social Organization	Degree of Competition for Resources	Political Form
primarily monogamy	social equality	♂ centered kin groups in small bands*	variable	amorphous
frequent polygyny	♂ dominance	♂ centered kin groups	high	variable centralization
primarily monogamy	social equality	♀ centered kin groups	low	
frequent polygyny	♂ dominance	♂ centered kin groups	high	patriarchal centralization and incipient development of state
monogamy and polygyny	♂ dominance	♂ centered kin groups	high	patriarchal clan organization, underfinanced except where under political or economic pressure from neighboring states
primarily monogamy	♂ dominance	differentiation of non-kin groups	high	state bureaucracy in attitude, nature

...ecies have been greatly simplified by culture contact

...e social forms as do subsistence horticulturalists, varying according to ecolo

well. Our task is to
forms to the parallel
fficient subsistence

societies are those
ly on the collection
ating of animals or
tatives of this Stone
dely throughout the
ropean colonialism,
Canada; the coastal
Plains of the United
and plains of South
Philippines, Japan,
rctic; and the Congo
ca. The majority of
id the life-styles of
tly changed by de-
foreign ideas and

foreign economies. We c
foragers as perfect living
life. But they do provide
of how humans, with onl
edge of cultivation, may
for survival.

Similarities among fora
large number of foraging s
and coastal regions of five
of consistent features. As a
are charged with the dutie
and offensive maneuvers, w
bilities for the nurturance
community members. Men
of hunting large animals,
themselves primarily with
joint hunting by men and
of smaller animals by wome
division of labor by sex an
domestic households are un
marriage. Monogamy preva
own culture, food-sharing u



t)
women in the Kalahari Desert
frica carrying home *mongongo*
ıt their staple foods. As in all
ıeties, work among these
t gatherers is divided (*in this*
pally along male/*female lines*–
r 21). In fact, the ability of
ngs to cooperate in groups
their labor while sharing the
group members' work is an
g feature of the evolution of
.

ıd. Systematic and organized
g is a feature of human social
which sets us off from our
es. Among other primate
ı adult generally forages for
d

more than one
always organize
viduals who sh
relative, althou
together throug
(less than fifty a
becomes too sc
lean seasons.

Differences a
tremendously wi
foragers occupy,
derable variation
For example, alth
in these societies
of provider to do
man" folk image
theories—women
among most fora
where few wild p
role for women n
social equality be
hunters and gathe





social groups
ve find several
ups of female
mixed groups
spouses. We
to differences
y the colonial
prevents valid

ctivity, forag-
mple political
s to plentiful
into sizable
y official, war
These larger
nts during the
, such as the
ers were even
entary villages
This was made
oluses through
salmon runs.

Horticultural Societ

For approximately
foraging was the only
edly provided an
existence in environ
tables, fruits, nuts,
10,000–15,000 years a
favorable habitats in
radically. Coinciding
glaciation, a sharp
development of th
Mesopotamian dese
expanding, and the
great deal of sufferin
to live there. Like m
affected by severe d
forced to migrate to
reliable sources of f
more favorable sett
could be resumed
experiment with tech

t and gathering group These
n the Congo rain forest have
f an interpersonally warm, non-
way of life (see Chapter 17)

hoe horticulturalists Horti-
ers to plant food production
nology limited to the use of a
k or hoe to turn the topsoil
or source of work energy is
scle power only minimally
y tools





human subsistence—the *controlled exploitation of* plants and animals.

At this stage of our knowledge, w with certainty to a particular populatio Old World for the first achievement of Not long ago, *many theorists saw the M* center of innovation. In Israel and Jord years ago, villages of foragers were reap primitive sickles and supplementing t wild wheat and barley seeds. *More d tions of cultivation* appeared approxima later in northern Iraq and at the sophis Catal Hüyük in Turkey. However, re indicates that plant domestication o taneously in several areas of the Old W 1968). In the Far East, domesticated plan extremely early date that may prove t dates of Middle Eastern traditions (C America, cultivation was independently Valley of Mexico at a somewhat later 6,000–7,000 years ago (MacNeish 1964).

At least until the colonial era, the of the world's cultivators employed har to those found in these ancient societie limited knowledge of techniques for so or water control. Hoe farmers exhaust of their plots and fields and periodicall virgin land, leaving the old tracts to fallo is consequently a wasteful type of farmi land use,* and it does not generally sedentary way of life. However, the popu and organizational complexity of hortic is far greater than that of foragers i environments. Today horticulturalists largely to remote rural regions, especially

Two basic types of horticulturalists r guished: subsistence farmers and sur *Subsistence farmers* are those whose effo of their aspirations, yield only enough fo life on a comfortable level. In contrast, s live in more favorable environments and

* *However, recent research shows that slash ticulture is much more efficient than had believed (see Chap 5)*

rplus farmers are pre-
ion and exchange of
nic strategies seem to
n the social forms of

farmers are found in
stacles to successful
l forest settings where
effort in clearing plots
ested by animals and
ion among neighboring
mic warfare is not un-
litical units are always
osed of a number of
In essence, each local
of male kinsmen who
wn fields or to pillage

avorable environments
ies with considerably
mal competition with

other societies in the sa
able to produce surpluse
exchange of wealth are s
This type of economic stra
lations strike an essentia
with one another and with
systematically eliminated i
times by more productive,
groups that have survived
from those of subsistence f
environments. Because resc
organization encourages
competition among groups
share food. Such societies
that are formed around cl
rather than related men (N
220–229).

The usefulness of this type
lie in two basic social facts:
most societies, and hostiliti
warfare usually occur betw



Cross-cultural studies have shown
organizing their local communities
men have a significantly higher inci
combat than those who orient them
women (Otterbein and Otterbein 1965)
related men are required to join the s
their respective wives at marriage a
entire lives working and sharing food w
are *not* their immediate kinsmen, they
likely to come together for common a
vities. Subsistence farmers in favorable
in fact, a very low incidence of feuding

Among horticulturalists who produ
they consume, then, we see two bluepri
social relations. Where competition fo
great, males are more likely to form the l
and economic groups. In situations that
competition for resources, the opposite
relationships among males are less str
pattern shows an uncanny similarity t
specialization on the basis of sex note
nonhuman primates and may be an exte
adaptive primate pattern into human s

Surplus Farmers Surplus horticultura
ways found in relatively favorable enviro
seem to be the direct descendants of non
subsistence farmers in these same region
latter communities at some point shifted
nomic strategy to overproduction (the
creation of surpluses) is a question about wh
only speculate. Perhaps the critical factor
ecological change resulting in increased c
for available resources, such as the populat
sion that accompanied the farming revoluti

All surplus horticulturalist groups have
dense populations, highly developed int
external markets, more sophisticated politi
and a tendency toward military expansion.
geared not only toward the production of
food but also toward the acquisition of new l
labor supplies, and new wealth outside th
territorial boundaries. Surplus farmers, with thi
competitive orientation, generally organize th
into social groups of related males that ca
colossal proportions: Thousands of individu

...lage elder ... Cheyennes show
...restraint of a Senate Interior
...eeting in Washington in
...ge are well known for their
...behavior and a world view
...the importance of inter-
...nously. The author of this
...sts that there is a meaning-
...between Hopi emotional
...restraint, and their
...ditional social organization
...d to their subsistence
...ology

im descent through a common ancestor. The surplus alth is unevenly distributed among the population, ing rise to social classes and, in many cases, to a tinction between the slaves and the free. The mitive state—in which a person or body of indivials exerts control over the production and distribun of goods and a monopoly over the threat or use of ce—makes its debut.

However, in all horticultural societies, women ntinue to be the primary producers. In the vast jority of cases, they plant, tend, and harvest crops urdock 1937; D'Andrade 1966). Where they partici- e, the men always engage in the heaviest tasks. h as land clearing. (For a comparison of horticultural l agricultural patterns of sexual labor division, see 3-3.) Interestingly, this basic division of labor by is influenced by the horticulturalists' economic ds. Groups that are geared toward maximum protion favor the accumulation by men of multiple es. This form of marriage increases the number of rers, and hence the quantity of produce, for vidual male household heads. In contrast, groups are geared only toward subsistence production er monogamy. In this situation, fields are often vated jointly by a number of related women, and esulting produce is shared among their respective ands and children

Figure 3-3
Sexual Labor Di
A comparison o cultivation betw horticultural and Equivalent partic clearing of land and harvesting b

	SEXUAL PRI	
Cultivation Type	Females Primary	
	N	%
Horticulture	52	50
Agriculture	13	16

oralist Societies

environments where aridity or extremes of temure seriously inhibit successful cultivation, domesd animals often replace plants as the primary e of food. Societies that depend on the meat and products of herd animals for the greater part of diets are termed *pastoralist*. Such societies are today in the extreme northern, central, and western regions of Asia, and in the northern, l Saharan, Sudanic, and eastern areas of Africa. herd animals—reindeer, sheep, goats, horses, , or cattle—require a constant supply of water sh pasturage. For this reason, herding societies hly mobile and rarely cluster into sizable, sedenmmunities. The frequent harshness of their ments encourages heightened competition

...ar Bedouin encampment. The ...are a nomadic pastoralist group ...way of life is described in detail ...ter 11. Their society is organized ...male-centered kinship groups. ...the Arab Bedouin nomads the ...concentrations of livestock and ...occur during the hot dry season—...for instance, among the Fulani ...of Africa, where cattle and ...concentrate during the cool wet ...Bedouin summer camps are ...near permanent wells. The ...are brought to camp in the ...n, watered (about 35 gals. per ...ned), then taken to the edge of ...to rest for the night. They are ...again in the morning (about ...then led to pasture. At the ...the summer this process is ...every third or fourth day. This ...lows the edge of a Mutayr ...amp. Their black tents are in ...ground, in the foreground a ...ibesman is coaxing his camels ...down for the evening.

among ne
Indeed, t
centered
notorious
ucts form
societies
cultivated
It is likel
adaptatior
habitats r
evolution.

Societie
then, vary
productive
organizatic
and herdin
each cultur
new envirc
technology
production
ability to s
apply creati
physical anc
no return.

